ENGINEERING NEWS-RECORD

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UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

No stick in the mud, this tractor!

Oliver OC-18 turns mud to profit: two-track power, wide torque engine pay-off!

Even in deep, sticky clay, this Oliver OC-18, excavating on a superhighway, kept right on working—piling up profits in spite of the gummy ground condition.

Oliver's husky, 133 drawbar h.p. engine has what it takes to pull through tough going. An exceptionally wide torque span actually steps up lugging power as the engine slows under load. In fact, the OC-18 can deliver 34.000 maximum drawbar pounds' pull in first gear at 1½ miles per hour!

Combined with this power is the OC-18's extra-high clearance and exclusive steering that keep power on both tracks at all times. You can work in wet, muddy ground...over rocks and obstructions...turn out more work every day in any weather!

Try the OC-18 yourself. Learn its power and traction advantages as well as its easy maneuverability and effortless, finger-tip air steering. See or call your Oliver Industrial Distributor for a demonstration.

The Oliver OC-18 is available with cable or hydraulically operated bulldozers.

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

THE OLIVER CORPORATION

a complete line of industrial wheel and crawler tractors

Safety-Beam Protection at "Million Yard Fill"

Pushing the recently completed West Virginia Turnpike through the rugged foothills of the Alleghenies has been called "the toughest road job east of the Rockies." Winding mountain streams, canyons and sharply pitched hills were hardly an ideal terrain for roadbuilding.

To build the new highway with grades generally less than 3 pct and with curves limited to a minimum radius of 1000 ft required tremendous excavating, grading and filling operations. More than 70 bridges were built to carry the 88-mile-long turnpike over the mountainous terrain.

Near Beckley, W. Va., is the "million yard fill," a good example of how the terrain was "rebuilt" to conform to the highway's specifications. Here, as at many other points on the West Virginia Turnpike, Bethlehem Safety-Beam Guard Rail was installed to help protect motorists. These sturdy sections of steel plate were bolted flush end-to-end to steel posts, making a continuous beam of impact-absorbing rail.

Bethlehem Safety-Beam Guard Rail is a strong and effective highway guard, with sufficient strength to withstand severe shocks from colliding vehicles, yet enough flexibility to redirect the vehicle parallel to the rail with minimum damage to both rail and vehicle.

Write to the nearest Bethlehem office for a copy of our new Safety-Beam Guard Rail catalog which gives full details and specifications.

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BETHLEHEM, PA.

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1

Largest of the Bucyrus-Erie walk-

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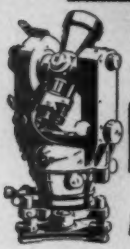

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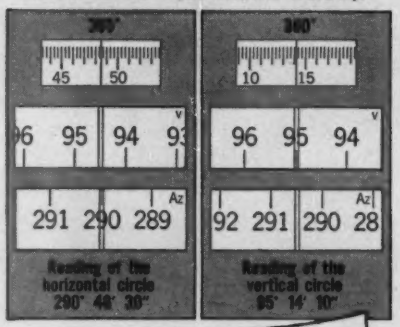

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Largest of the Bucyrus-Erie walking draglines is this 1250-B which swings a 23-yd. bucket on a 235-ft. boom or a 30-yd. bucket on a 200-ft. boom.

BUCYRUS ERIE

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For efficient, large-scale excavation, you will find a Bucyrus-Erie walking dragline to match your job. There are ten models, from the readily dismantled and reassembled 180-W to the big 1250-B — the largest selection of walking draglines in the world.

Whatever size you choose, you are assured of the same dependable performance that has been characteristic of Bucyrus-Erie walking draglines for years. They have front end design that combines great strength with light weight; the exclusive Bucyrus-Erie walking action with simplicity of design, cushioned action and smooth, fast moveups; and Ward Leonard variable voltage control on all electric powered machines — plus many other features which have made them famous the world over.

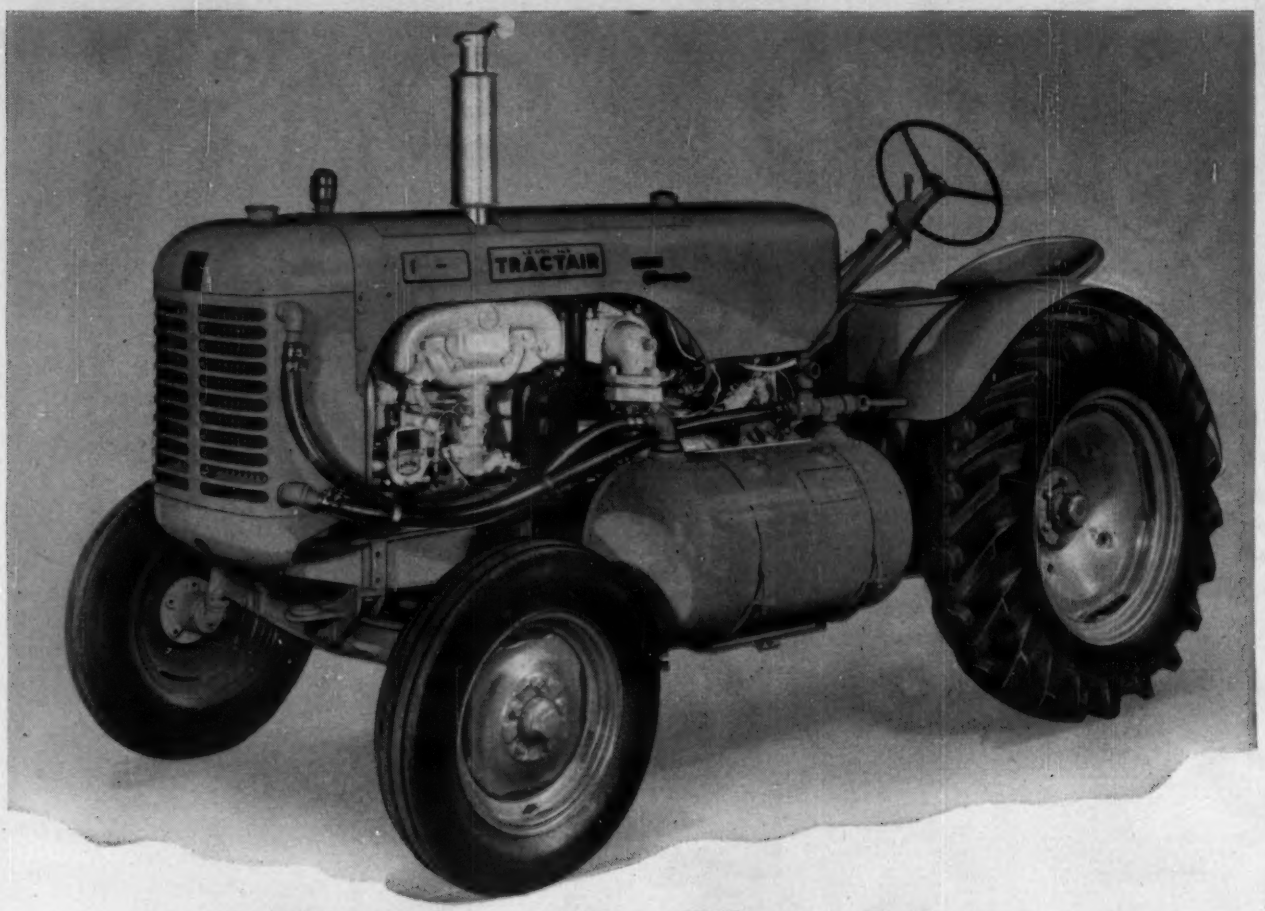
Whenever a job involves huge yardages, a Bucyrus-Erie walking dragline — in a size to fit your needs — is a dependable way to economical output.

47L55C

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

1880 **75 Years of Service to Men Who Shape the Earth** 1955



Still More for Your Money

...Le Roi Tractair compressed-air output is increased from 105 cfm to 125 cfm

For the past ten years, the Tractair unit has been making friends and cutting costs on jobs everywhere. Now, with its increased capacity, it is even more productive.

Tractair is still a combination 35-hp wheel tractor and compressor. But now it produces 125 cfm, instead of 105 cfm of air. It will run an extra breaker, tamper, spader, etc. And it has the mobility to take this extra air power almost anywhere you need it without tying up either trucks or men.

Other new features of the 125 Tractair unit are: Econotrol — which varies engine speed to match air demand and promotes longer engine life. An aftercooler — which reduces the temperature and moisture content of the air so that air hose lasts longer — tools run better.

The 125 Tractair unit can be fitted with attachments, too, so that it can be used for loading, backfilling, digging, sweeping, hoisting, tamping and drilling.

There has been no change in the list price. This, plus Tractair's multi-purpose usefulness means that you get still more for your money.

Let your Le Roi distributor show you how the Tractair unit can cut your costs. A new bulletin is available — just write for your copy.

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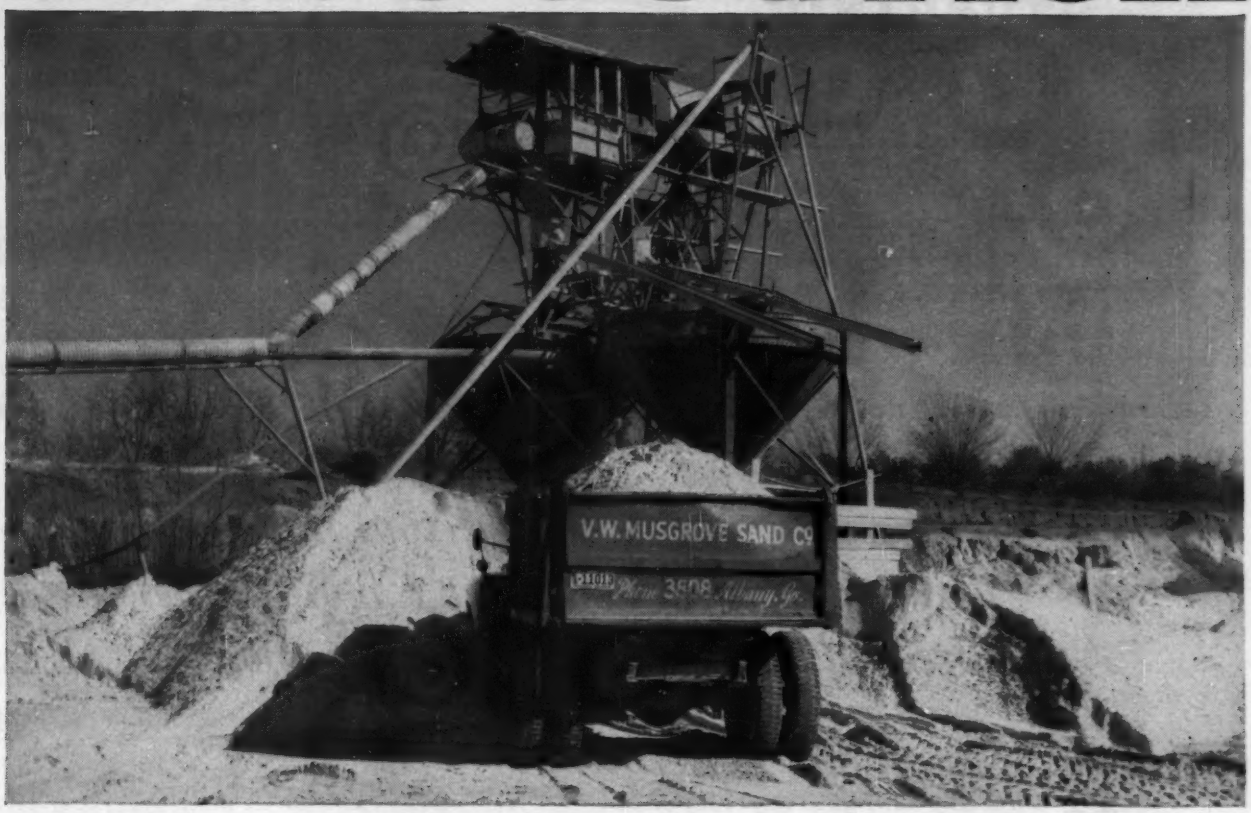

Sand company gets 95,000 miles with recaps from all-nylon All-Purpose tires

MUSGROVE Sand Company trucks haul sand and gravel to construction sites within a 45 to 50-mile radius of Albany, Ga. Working as many as 75 hours a week, these trucks travel over all types of roads in all types of weather. B. F. Goodrich tires are used 100%—chosen, says owner V.W. Musgrove, because they cut costs.

B. F. Goodrich All-Purpose tires are built with an *all-nylon* cord body. Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. The *all-nylon* cord body outwears even the extra-deep All-Purpose tread—up to 67% deeper than that of a regular tire—and can still be recapped over and over! Musgrove reports that with 2 recaps he gets 95,000 miles of service from *all-nylon* All-Purpose tires!

All-Purpose cleats are curved to grip better, on or off the road. "Buttons" on alternate cleats resist skidding. And as the center rib wears, it widens, putting more and more rubber on the ground, decreasing the rate of wear. All this, plus B. F. Goodrich compressed tread construction that resists abrasion and adds mileage, means that this sand company's tire dollars go farther.

See new *all-nylon* All-Purpose tires (rayon construction available at lower prices) at your B. F. Goodrich retailer's. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.*

SUPER EXPRESS TIRES used on front wheels here will give about 150,000 miles of service with recaps, V. W. Musgrove reports.

"ALL-NYLON All-Purpose tires have definitely shown that they give much better than average service," owner Musgrove writes.

Specify B. F. Goodrich tires when ordering new equipment.

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

CONTRACTORS: THIS IS IT!

The revolutionary NEW three-way

DRILLMASTER

...the only completely self-contained, self-powered drilling rig that combines these three advanced rock drilling methods

Here in one completely integrated package is a totally new "three-way" rock drilling machine designed to speed up work and provide a range of hole sizes and drilling depths heretofore not available in a blast hole drill. The versatile Ingersoll-Rand Drillmaster embodies three combinations or methods of drilling.

Combination one utilizes the new revolutionary DEPTH-MASTER or "down the hole" drill for deep blast holes up to 6" in diameter.

Combination two is available with the POWER-MASTER, a new heavy-duty hammer drill for 4¼" holes.

Combination three with the ROTO-MASTER rotary drill is ideal for rotary drilling for hole sizes up to 6¼". You can buy any one or all three of the drilling combinations to suit your own requirements.

Never before has there been a rock drilling machine that offered so much for blast hole drillers. The Drillmaster's versatility (three ways of drilling), its independent rotation, and long wearing Ingersoll-Rand Carset Bits will give you faster and cheaper drilling in any kind of rock.

Whatever your rock drilling problem, consult your Ingersoll-Rand representative. His experience is yours for the asking. Ask him or write direct for informative Drillmaster Bulletin Form 4164.

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The **DRILLMASTER**

and GYRO-FLO 600 compressor are available for truck or tractor mounting

Complete tower packages are available for those who might like to utilize Drillmaster drilling advantages on their own truck or tractor. These packages include the tower, drills, brackets, leveling devices and controls.

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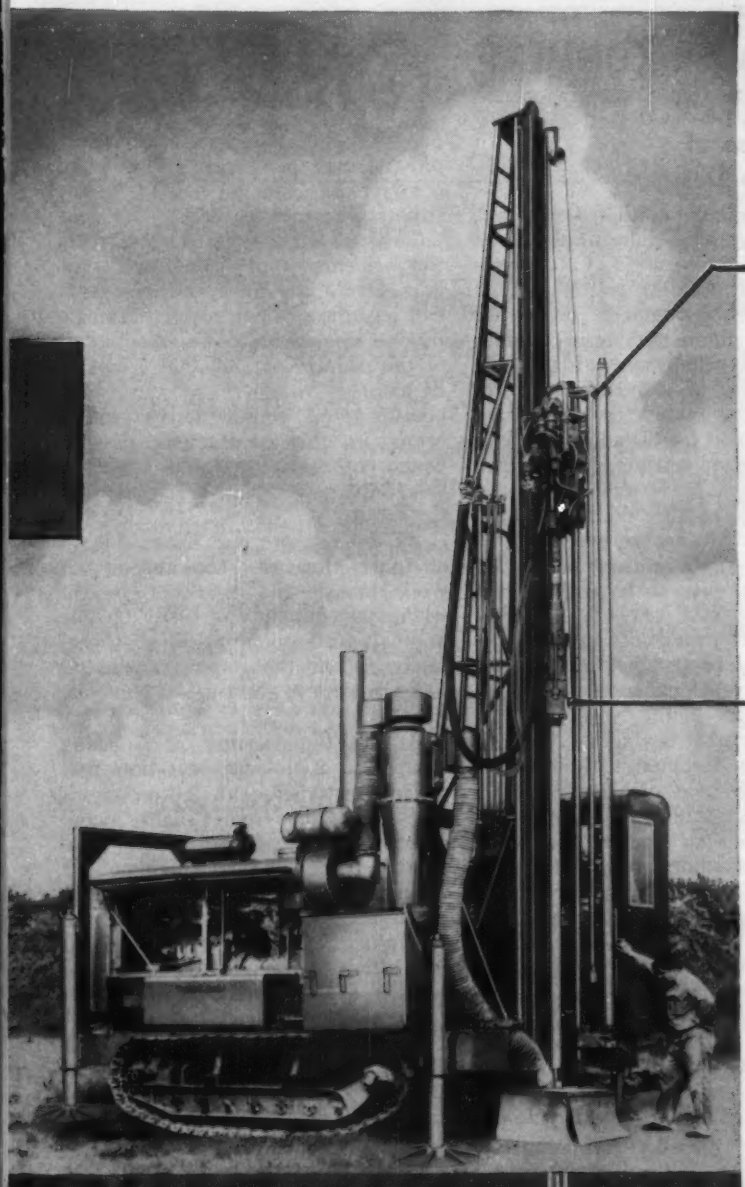
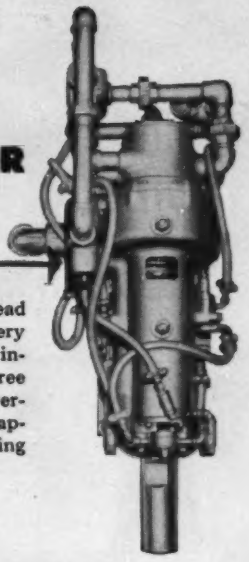


ROTO-MASTER
"rotary drill"



This powerful rotary drill head is standard equipment on every Drillmaster and supplies the independent rotation for all three methods of drilling. This powerful independent rotation is appreciated by all when drilling tight or broken ground.

POWER-MASTER
"out-of-the-hole drill"

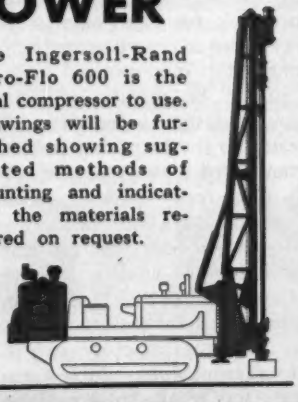
The Power-Master, a new extra heavy-duty hammer drill is the most powerful machine in its class. It provides the fastest drilling combination for 4¼" holes to 60 ft. in depth, making it second to none for construction work. It utilizes long wearing Carset Bits on proven Ingersoll-Rand rods and threads.

DEPTH-MASTER
"down-the-hole drill"

In this truly outstanding contribution to rock drilling the drill actually goes down the hole with the bit—No energy is lost in long heavy drill steels and much deeper blast holes are possible than with hammer drills. Rotation is provided by the Roto-Master and 6" Carset Bits are used.

TOWER

The Ingersoll-Rand Gyro-Flo 600 is the ideal compressor to use. Drawings will be furnished showing suggested methods of mounting and indicating the materials required on request.



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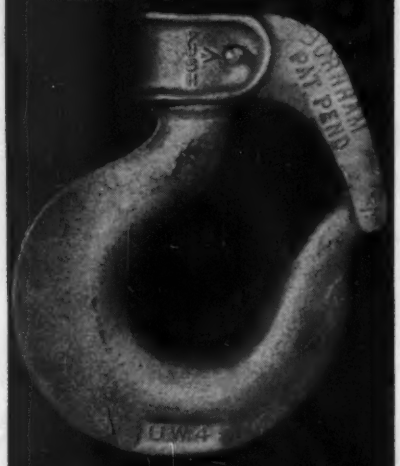
SAFETY
HOOK



At last a 100% safe hook for every type of hoist and puller. The pushbutton safety gate automatically locks closed, yet opens instantly with a touch of the finger. The safety gate also acts as an indicator to warn operators if the hook is even slightly sprung. Bullard-Burnham hooks are available in sizes ½-T-16A.

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READER COMMENT

In Defense of Alternate Designs

SIR: Your March 24th issue, p. 22, quotes some of General Tulley's remarks at the annual A.G.C. Convention at New Orleans on the subject of the Corps of Engineers' experience with bidder alternate designs: "Savings at best were small, consisting largely of reductions of standards and not amounting to enough to compensate the government for the cost of evaluating alternatives, settling disputes and making awards." He states they have now abandoned the alternate design policy and "rely on the experience of our staff to decide on the feasibility of including optional materials or methods on projects."

The writer would like to comment on these statements since his firm has had considerable experience with alternate designs in the Northwest and in Alaska—actually having had 19 alternate designs accepted with a saving to the government of over $800,000.

On General Tulley's last statement about relying on "the experience of the staff" regarding optional materials or methods, it is to be observed that changes in plans originating at Washington, D. C., might at times be a matter of some delicacy for the staff. At the same time, more than minor changes in plans of local district origin, prepared either by the Corps or by private architect-engineers, are scarcely to be expected since, quoting from specifications, "It is emphasized that the government design has been adopted after careful study to determine the most economical methods of providing the desired facilities." In short, under conditions prevailing, nothing of great significance is to be expected in the way of changes.

I find it difficult to believe that the cost of evaluating alternates, with plans and calculations submitted as has been required, can even approach the cost of preparing the alternate designs. I can assure everyone that those costs in our work have been an exceedingly small percentage of the amount saved by the government. We found no difficulty in equaling the government designs and sometimes we markedly improved on them.

"Alternates on materials" to which General Tulley referred were largely a mockery under the other conditions the Corps' specifications imposed. It is only by permitting changes in both materials and design that substantial savings are to be affected.

"Savings at best were small." On our work the savings were sometimes only a small percentage of the total contract price, but on the cost of the structural frames, to which our alternates were almost entirely confined, the percentages of savings were frequently of a very substantial character. But regardless of percentages, a saving by one single firm in one single part of the country of $800,000 is not to be scorned. Moreover on a number of occasions we found and corrected errors in the government designs, which uncorrected would have involved the government in sizeable bills for extras.

As for disputes and extras due to alternates they were confined on our work almost wholly to one project where our design was based on the original government-furnished topography, which topography was found to be in error at the time of construction.

As for the expense of "making awards," it is not apparent how that added materially to government's costs. Certainly some slight inconvenience and expense to the government is to be expected. Neither is it apparent how there can have been any "reduction of standards" when the government specifications stipulated that alternate designs should be the equal in every essential respect to the government design.

The writer would advance the thesis that there is no way of assuring economical construction of public work, of a reasonably simple type, without alternate designs. This statement is not to be construed as implying that all publicly engineered work is costly and uneconomical, for assuredly that is not the case. Neither is it to be construed as implying that all privately engineered work is admirable and economical, for that likewise is not the case. But it is to be construed as meaning that monopolized engineering, public or private, without competition in design, is fraught with many hazards to the taxpaying public, that flagrant waste can and not infrequently does result under it, that such conditions ought to be terminated and that the only practical way to do that on public work is to have alternate designs supported by contractors' bids in cold, hard cash.

Perhaps the unsatisfactory experience with alternates to which General Tulley refers results from nothing less than the Corps' own evaluation of alternates. Certainly the rejection of good alternates would speedily put an end to their submittal, while ac-

BROS *tip sheet* **EXTRA**

50 HP, TORQUE CONVERTER DRIVE, FULL OSCILLATION FEATURED IN NEW BROS SELF-PROPELLED ROLLER

MAT RESURFACING, SEAL COAT JOBS AND SHALLOW LIFT COMPACTION... DONE SMOOTH AND FAST BY BROS SP-54!

Minneapolis, Minn. "This sonuvagun is just what I've been looking for in a pneumatic tire roller!"

... That's the standard reaction from the many road contractors who've gone over the new BROS self-propelled 5 x 4 pneumatic tire roller with a fine tooth comb.

Backed by special design and exhaustive testing, the SP-54 is unquestionably the nigh perfect machine for mat resurfacing, seal coating and compaction jobs in the shallow lift range. And it's easy to see why:

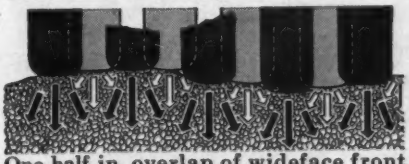
Torque converter drive, 3-speed transmission and shuttle gear provide the smooth, high maneuverability needed for the exacting compaction results being specified these days. Combined with the 50 hp engine, you've got a smooth flow of real power at 0 to 18 mph speeds — both forward and reverse.

Shuttle speed feature of this new roller saves time by eliminating turn-around on short road beds. It eliminates the bugaboo of tipping over chips frequently done by tow tractors — in fact, it saves cost of tractor, too!

FULL OSCILLATION

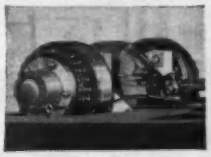
Here, take a look at the full oscillation of all wheel pairs on the SP-54. This feature is engineered into the front wheel pairs as well as the rear for even load distribution for uniform compaction densities... 2,000 lbs. per wheel or 265 lbs. per lineal in. of rolling width.

100% COVERAGE



One-half in. overlap of wideface front and rear tires provide solid coverage over entire surface. Drawing shows overlap and the flow of compaction exerted to knead out surface voids. On seal coating, this BROS "first" correctly imbeds sand without any grinding or crushing action.

POSITIVE CHAIN DRIVE



Tractive effort is maximized by positive chain drive to *all* rear wheels. Dual chain drives smoothly transmit drive power so there's no wheel spinning or tearing up seal coat surface.

FORE AND AFT VISIBILITY

In both forward and reverse, the operator sees and knows exactly where he's at... another example of how steady, uniform compaction work is inherent in the SP-54's design. Note easy accessibility of shut-off valves under operator's seat for optional front and rear water sprinkler bars.

EASY HANDLING BY HYDRAULIC STEERING

UNIFORM hydraulic steering of the SP-54 gives you sure, smooth control at all engine and roller operating speeds. High turning angle for easy turn around.

DOUBLE BRAKING, NO "DEAD WHEEL" IN REAR

Hydraulic brakes on both rear wheel pairs can be operated simultaneously or separately — as you see here. Loss of tractive effort on one wheel pair is quickly corrected by braking it; this transfers needed drive power to other pair. As is obvious, there's no "dead" wheel to get unit "hung up" on extreme surface contours.

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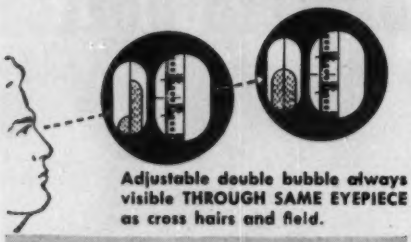
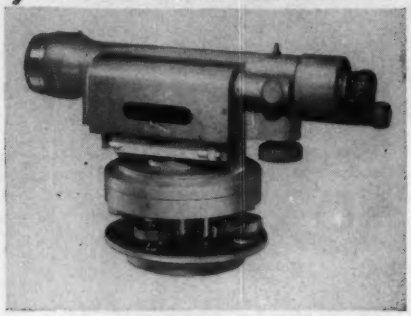


Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.



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.....

ceptance of poor ones would make the outcome highly unsatisfactory to the Corps. It is a fact that the Corps has at all times—and quite properly—retained the right of evaluation of alternates, but with that right, of course, has gone the responsibility for it.

HOMER M. HADLEY
Consulting Engineer
Seattle, Wash.

Let Congress Know

SIR: I have read with great interest your fine editorial (ENR April 14, p 132) that was reprinted in the Chicago American of April 21. It calls attention to a condition that the people should correct at once. Congress will listen if the people will speak. Your fine editorial should unlock the tongues of many and, if so, Congress will take heed.

Besides the wrangling over the road program your editorial points up another, far greater failing of Congress. Consciously or not you call attention to the fact that most Congressmen are forever playing politics. This should not be. Indeed if our great nation is to continue to go forward in the traditions, the glories of its history, all members of Congress must come to realize that they, each one of them, represent all of the people of the whole United States. They are not sent to Congress to look out for the interest of one locality, one political party or one interested, influential bloc.

It seems to me that a workable solution to the problem of financing our vitally needed highway program can be readily worked out through a combination of President Eisenhower's bond plan and the tradition of each state paying its own way. To my way of thinking it seems logical that this program should be paid for on a nation-wide basis since the whole nation, as well as each state, will benefit from the better roads that will be provided. Benefit by the better transportation afforded both for personal pleasure and for commerce. Each individual in the entire United States will benefit. They will benefit because these highways will furnish the protection against any would-be invader. As much as we need these highways for commerce and pleasure we need them far greater for the rapid deployment of our Armed Forces.

I believe that the over-all cost should be figured on an over-all per capita basis and each state assessed for its per capita share. In this way the so-called poor states and the thinly populated states will be paying no more than their just share. Each state can float the bonds necessary to pay its share immediately and then pay off these bonds from its own gas tax and license tax over the years.

Since the primary need for these highways is for our defense, I hope that those charged with building them will see to it that we get the best highways possible. As it stands today, very few widely scattered sections of our streets and highways can hold the Army's largest prime movers. I hope that no local demands for the use of state-produced materials on the roads within any state will so weaken these highways that they will fail when they are most needed.

ROBT. K. FLYNN
Chicago, Ill.

Inter-American Highway

SIR: As a Central American I was very much impressed with your editorial entitled "An Overrated Highway" in the March 10 issue, p.160.

Because I know the actual precarious condition of some unfinished sectors of the Inter-American Highway I feel the need to stress that Vice President Nixon was very well advised by someone knowing the imperative necessity of finishing it as soon as possible.

Since 1943 the maintenance given to the unpaved sections has been far behind the traffic toll on them. Many of these sections either should be finished soon or the total cost of the highway will be increased well beyond the original estimates.

Precisely because the impassable sections amount to but 8 percent of the total length, there is justification for a definite push to open soon that highway, linking the countries it crosses, assuring a safe means of transportation to the vital military zone of the Panama Canal and opening new markets in a potential economic area.

The present expenditures and construction rate will hardly complete that highway in 10 years, not to speak of the deterioration that it will suffer due to the increasing traffic and insufficient maintenance. That deterioration might render the highway useless at the very moment when special circumstances may call for its immediate use for placing safely any supply to its farthest point in seven days.

It could be possible that a new route along the Costa Rican South Pacific coast would prove to be preferable, but attention should be paid to the high cost of the many bridges that would have to be built due to the

(*Continued on page 14*)

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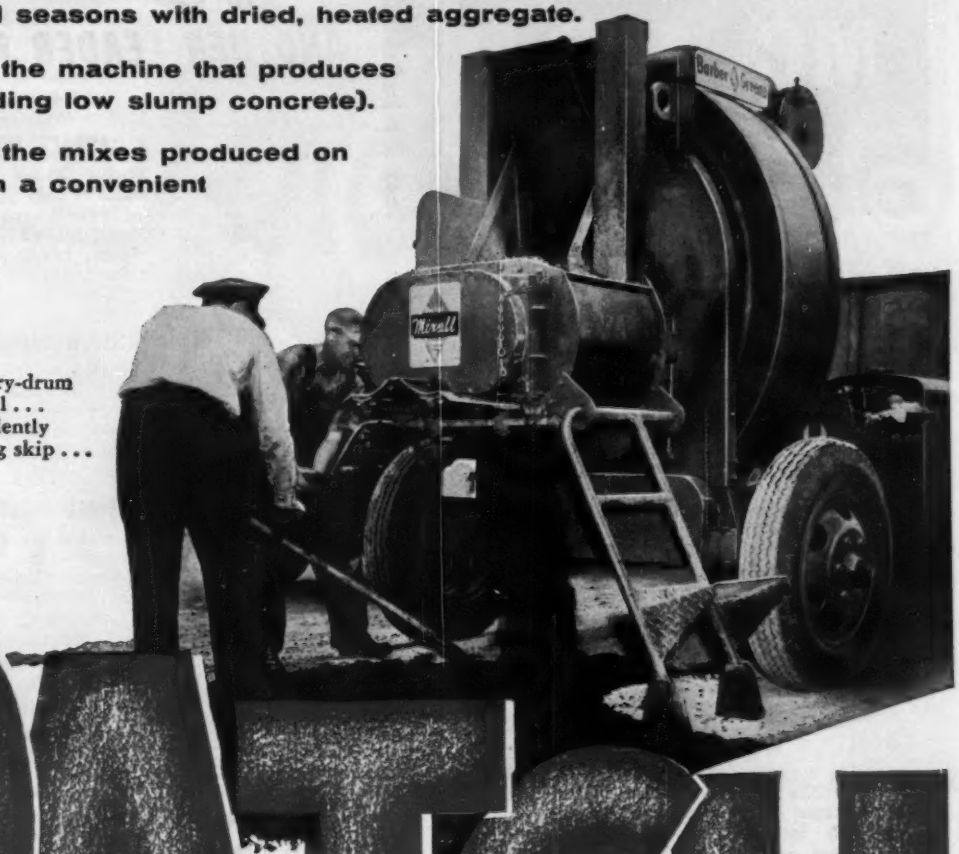

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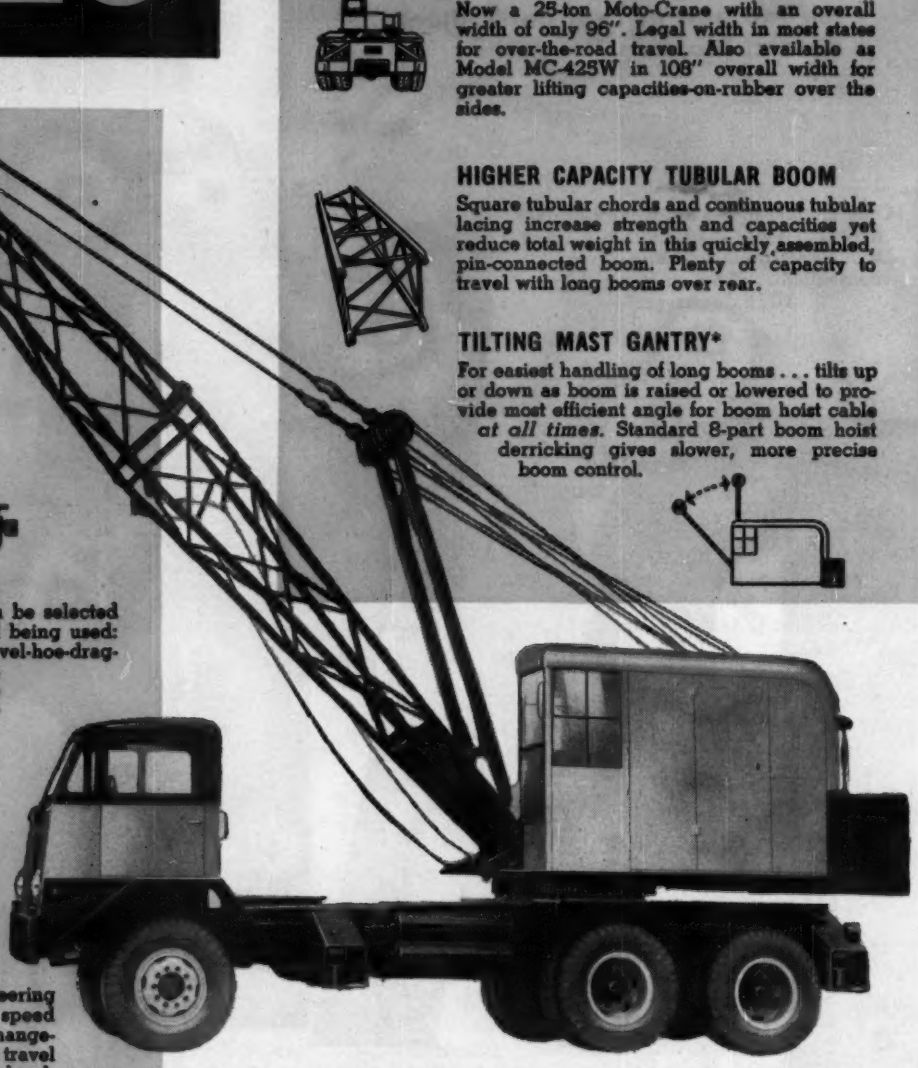

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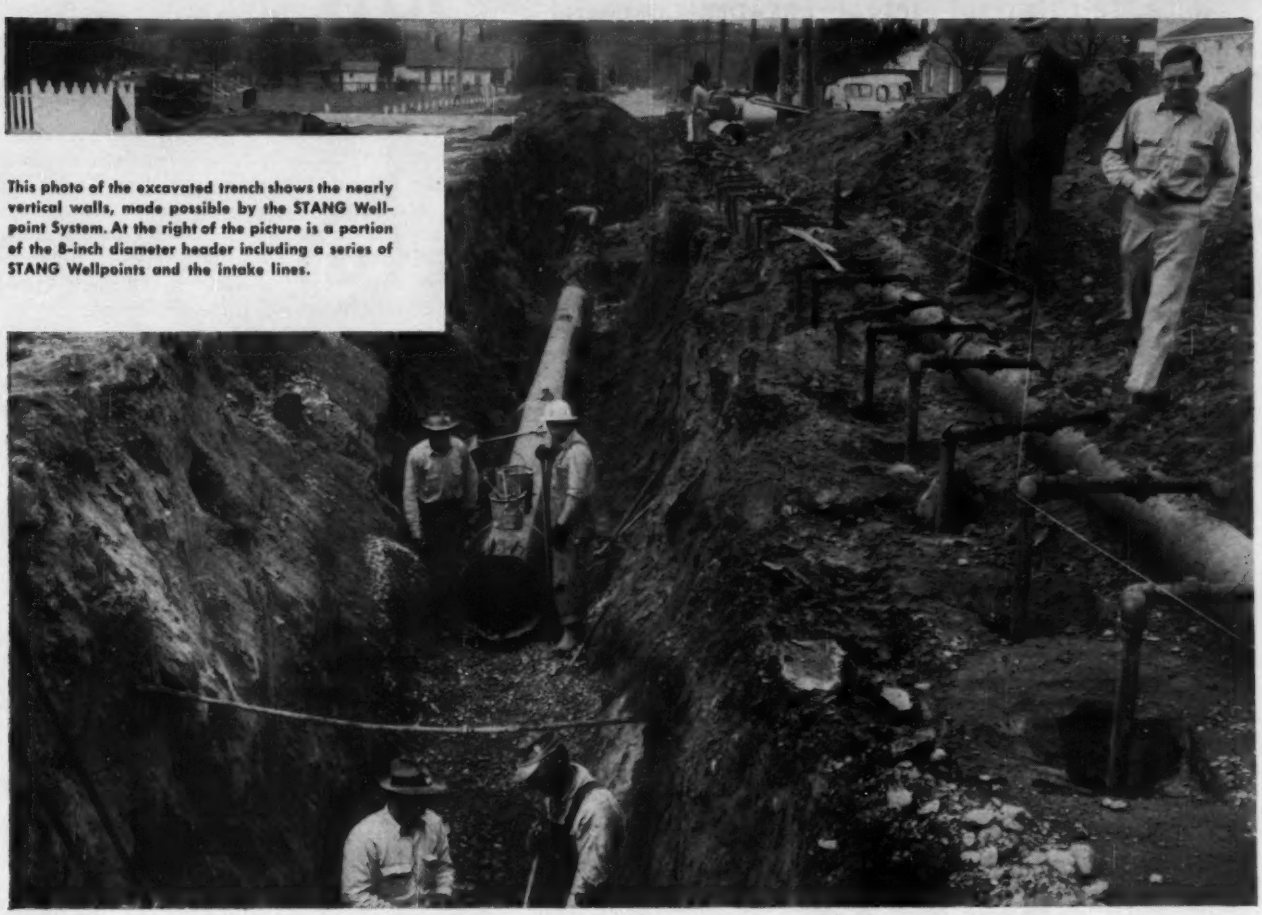

This photo of the excavated trench shows the nearly vertical walls, made possible by the STANG Wellpoint System. At the right of the picture is a portion of the 8-inch diameter header including a series of STANG Wellpoints and the intake lines.

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Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
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READER COMMENT

numerous rivers in that region, beside the fact that it would not aid a new section but one already in well organized productivity, with good railroad lines and shipping facilities, in the banana plantation area.

I agree with you that an urgent appraisal is needed to save the hundreds of miles of unpaved highway and to open to traffic the relatively few miles that will put in service this commercial, military and cultural link.

Carlos Borge
Boston, Mass.

Architecture and Art

Sir: With reference to W. Fontaine Jones's letter in ENR March 31, p. 8, under the heading "Architecture and Art," I wish to commend his stand on the absence of artistic achievement in so many architectural projects that have been constructed during the past 20 or 25 years. The current trend, especially in the field of office buildings, emphasizes more and more the extensive use of glass, aluminum or other thin light panel walls, to circumvent the former use of masonry construction, because of the so-called savings involved.

The publicity that has been given to the phenomenal speed of erecting several aluminum faced buildings during the past year is analogous to the publicity that was given to welded ships during the past war. Certain fabricators capitalized on the two or three days that were required to put very large sections together, without any mention of the hours entailed in preassembling the separate large sections that entered into the final assembly. If this had been taken into consideration, the overall manhours involved, would not have been much different from what other competitors had to contend with, in the normal fabrication and assembly of war vessels. Incidentally the vessels that suffered most damage in service were invariably the high-speed jobs that required a few days to put them together.

Going back to the quickly erected wall panel jobs, the true appraisal should take into account the hours required to preassemble the units, the time of erection and the item of erecting the block sill walls, required by the local building code. Finally the watertightness of this new medium and the vulnerability of extensive damage due to unusual high winds or bomb blasts, cannot be set aside, when fair comparisons are to be made. The life of these new media of wall construction, under years of extreme weather conditions is still an unknown factor.

I firmly agree with Mr. Jones that in the construction of several prominent projects here in New York City, a great deal more could have been contributed to the artistic achievements of these undertakings, from an architectural standpoint, which would have made these buildings preeminent in their categories.

F. A. Ciampa
Youngson & Ciampa
Consulting Engineers
New York, N. Y.

Turkish ENR?

Sir: We are planning to start publishing a Turkish Engineering Magazine in Ankara, the first issue of which will be out soon.

We desire that one of the features of this magazine staffed by a group of civil engineers should be to establish construction and building cost indexes for Turkey similar to those of ENR.

Will you please forward pertinent literature on methods of preparing and theories regarding these cost indexes.

Orhan Yavuz
Publisher
Ankara, Turkey

CALENDAR

National Materials Handling Exposition, International Amphitheatre, Chicago, May 16-20.

Structural Engineering Conference, University of Missouri, Columbia, Mo., May 20-21.

Air Pollution Control Association, annual meeting, Detroit, Mich., May 22-26.

National Rivers and Harbors Congress, national convention, Mayflower Hotel, Washington, D. C., May 30-June 1.

National Society of Professional Engineers, annual meeting, Bellevue-Stratford Hotel, Philadelphia, June 2-4.

American Water Works Association, convention, Conrad Hilton Hotel, Chicago, June 12-17.

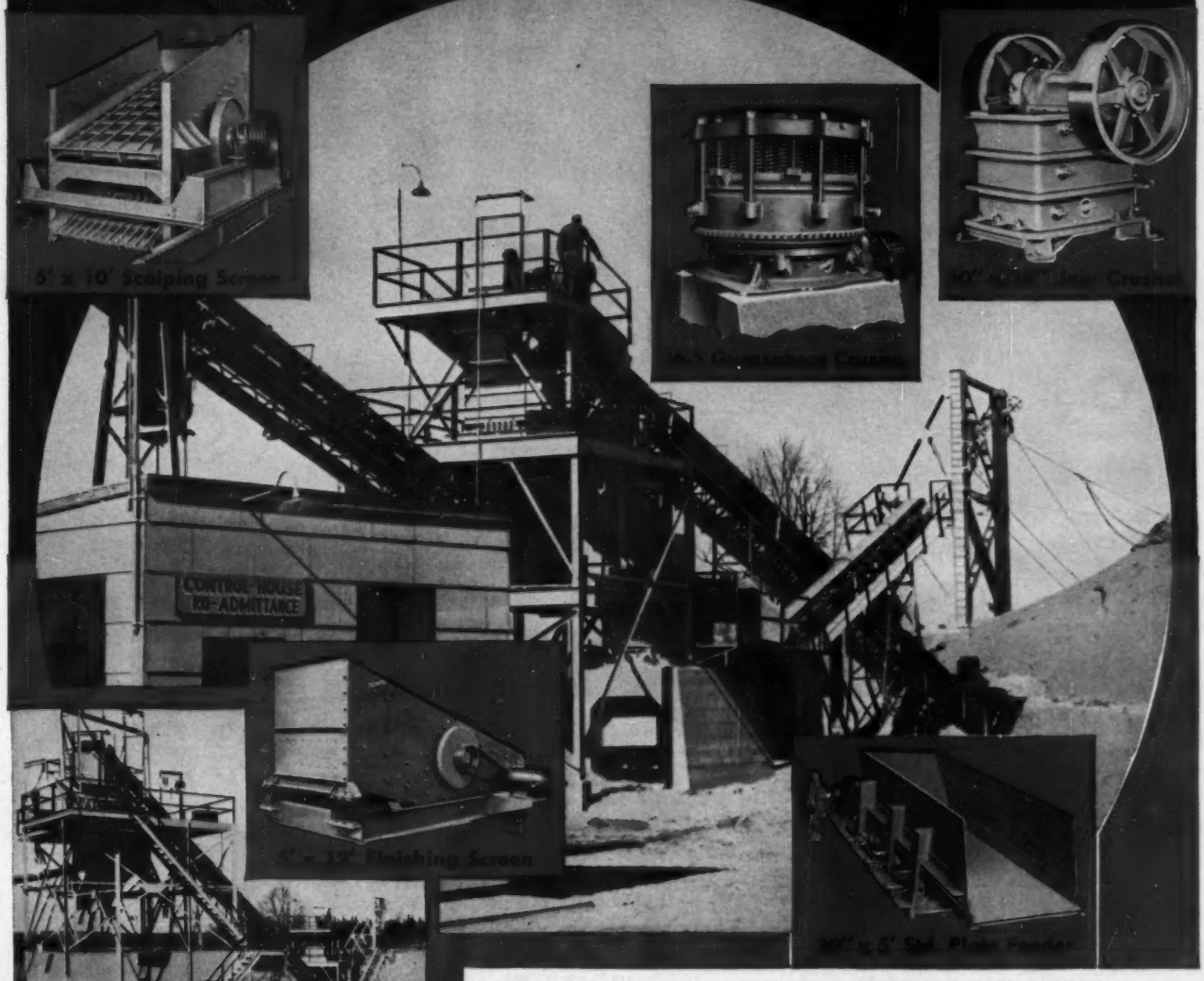
American Society of Civil Engineers, Spring convention, Hotel Jefferson, St. Louis, June 14-17.

The American Institute of Architects, annual convention, Hotel Radisson, Minneapolis, Minn., June 20-24.

American Society for Engineering Education, annual meeting, Pennsylvania State University, State College, Pa., June 20-24.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-July 1.

220 T.P.H. for OHIO TURNPIKE from this one man controlled TELSMITH PLANT



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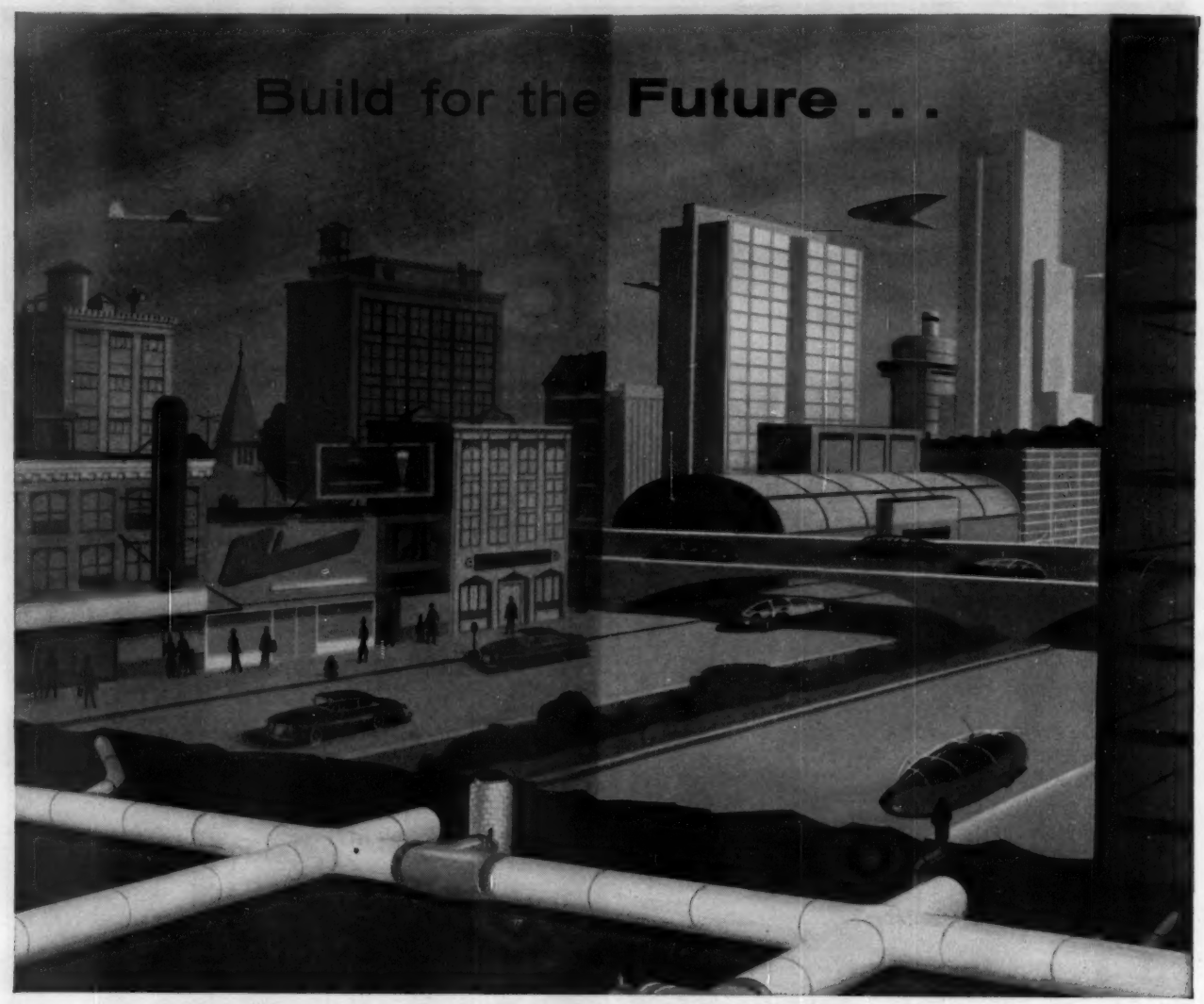

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THE CONSTRUCTION WEEK

NEW COST FACTOR—In connection with the campaign against smog, open fires will be prohibited after June 30 in the unincorporated areas of Los Angeles County. Contractors have been cautioned by the Southern California Chapter of AGC that the new regulation may introduce a sizeable new cost factor that should be taken into account in future bidding on jobs requiring land to be cleared of combustible materials.

INSTALLMENT PLAN BUILDINGS—The federal government has launched its lease-purchase program for construction of post offices and other public buildings. The Post Office Dept. has awarded its first architect-engineer contract under the program for a branch station in Scranton, Pa. Bids will be invited from construction firms and investors as soon as designs and specifications have been completed. And, within the next couple of weeks four other A-E contracts are to be awarded for postal projects. The General Services Administration currently is negotiating A-E contracts for its first four projects, including a dual-purpose office and post office building at Green Bay, Wis., and three post office and courthouse combinations at Lake Charles, La., Rock Island, Ill., Council Bluffs, Ia.

A MOTHER'S VIEW—State highway departments are constantly seeking expert advice these days on road safety. But, one of the most poignant bits of advice we've come across in a long time comes from a Pennsylvania farm wife in a letter to her state highway department. It reads, in part:

"We live on a farm which has a county road that so far has been safe for our children to cross. But now we hear they are going to macademize it. It will be a death trap for our children for it has a hill and a driver cannot see what is below and it could be a child. We almost live on the road and even now the cars come down at 50 miles an hour. If it was macademized, it would be just impossible for them to stop in time. . . . . Please let me know what to do if they are going to macademize it, for we have four families up here against it and two for it."

PARADE OF DAMS—Army Engineers are preparing to dedicate three multi-purpose projects in as many days next month (June 23-25) when the Corps will also celebrate its 180th anniversary. The projects are: Lucky Peak Dam on the Boise River in Idaho, Albeni Falls Dam on the Pend Oreille River near the Washington-Idaho border in northern Idaho, and the Lookout Point project, which includes the main dam and powerhouse plus the regulating Dexter Dam on the middle fork of Oregon's Willamette River. The projects represent an investment of $140,000,000 and will provide a power increment to the Pacific Northwest of 177,600 kw in addition to flood control and irrigation benefits.

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Over-all "U" Factor of Various Types is Equivalent to or Better than Conventional 16" Masonry Wall

More and more architects every day are taking advantage of the low-cost permanence of light weight Stainless Steel or Aluminum curtain wall construction. New buildings and complete industrial plants with bright metal exteriors are appearing all over the country. In the past five years, one industrial concern alone has built nine complete new plants employing Mahon Metal Curtain Wall construction throughout—the plant illustrated below is typical. When you plan your next building, call in a Mahon engineer and let him tell you more about Mahon Insulated Metal Walls . . . let him show you some outstanding examples of architectural treatment in ALL-METAL exterior design, or, if you prefer, some attractive exteriors with metal in combination with brick, glass block or other materials. Have him give you cost figures, too . . . because, in this type of construction, important building economies are realized through lower material cost, lower labor cost, and the cumulative savings and advantages deriving from reduced construction time. Mahon Insulated Metal Walls are available in the three exterior patterns . . . the "Fluted" or "Ribbed" wall can be field constructed up to sixty feet in height without a horizontal joint—a feature of Mahon Walls which, from an appearance standpoint, is extremely important in powerhouses, auditoriums or other types of buildings where high expanses of unbroken wall surface are common. See Sweet's for complete information including specifications, or write for Mahon Catalog B-55-B.

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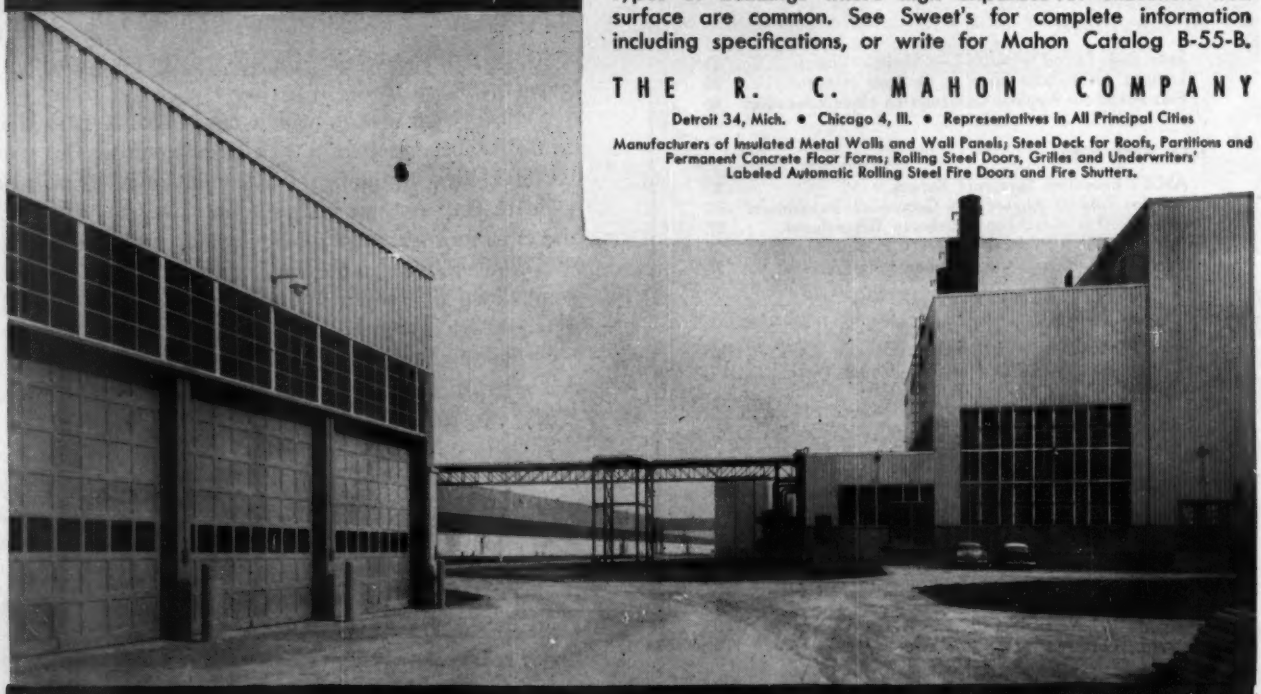

MAHON

WASHINGTON OBSERVER

The mid-May calendar on construction legislation in Congress is pessimistic. Delays over the major pieces of legislation are dimming chances of very much getting through before summer adjournment.

Military construction authorizations and money will be increased. That is just a carry-on program, though, much like the scheduled increase in highway funds coming out of last year's highway act. But the big package of new stuff—schools, more highways, power and reclamation dams—is moving molasses slow.

Highways: A big split is clear as between how to finance another step up. The dispute probably will force a holdover to next year (see page 23).

Schools: Problem of racial segrgation is stalling action.

Public works: Perhaps some new projects will get authorized, but big chunks will go over to next year.

•

Strongest position yet on movable spans for river bridges was taken this week when the Bureau of Public Roads testified on proposed new bridges across the Potomac at Washington, D.C.

River users will have to show dollar savings equal to added cost of building the movable spans plus the cost of their operation.

Historically, the Corps of Engineers has given river traffic a break—a real priority even though the additional cost of movable spans was high relative to the amount of river traffic involved.

Hindrance to land traffic is now a factor, too—so that river traffic has to come up with hard dollar figures to justify their need.

•

The Hell's Canyon Dam dispute is far from settled, despite an initial decision by a Federal Power Commission examiner that the Idaho Power Co., should be licensed to build a $95-million dam at Brownlee, Idaho, on the Snake River. He turned down Idaho's request for license to build two other dams as well.

The FPC still must act on the recommendation. And Congress has under consideration legislation sponsored by Democrats that would restore the Hell's Canyon project under federal domain. Though Congress probably will not act this session, further delay is expected before the issue is closed. Idaho Power, for one, will probably ask for reconsideration of its three-dam plan. Federal high-dam forces will go on with their fight.

•

Hoover Commission reports on housing, and on water and power are attacked from two different sources.

Housing Chief Cole stood strong against making FHA a non-government agency which the commission's report implied should be done.

Cole said that FHA would not be able to support many programs it is now behind, including urban renewal, if such changes were made.

Hoover report on water and power resources is also under attack before its release. Rep. Chet Holifield member of the 12-man commission, protests that not a single advocate of public power is a member of the 26-man task force that makes recommendations to the commission itself.

Report won't be out until end of June. It covers many big government construction areas: flood control, navigation, irrigation and reclamation, as well as power.

Holifield's blast came after he read the 1800-page report from the task force in draft form.

Aluminum grating now only slightly higher than conventional steel gratings

Borden, through many years of plant production control, can now produce aluminum floor gratings by the same commercial methods used for ordinary steel gratings. Thus the ultimate in-place cost is only slightly higher than that of conventional gratings.

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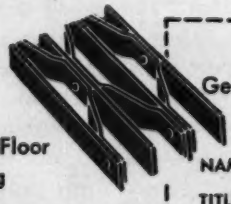

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An ENR Special Report:

Atomic Test Shows How Buildings Stand up

L. L. Wise
Associate Editor

One of the most extensive blast-damage tests in history was carried out last week in the southern Nevada desert. The Atomic Energy Commission set off a nuclear explosion equivalent to 35 tons of TNT, to test the blast effect on typical residences, industrial buildings and utility installations.

The test was carried out in close cooperation with the Federal Civil Defense Administration to provide information about blast effects on different types of structures, to help civil defense officials evaluate the amount of damage that might be expected from an atomic attack.

First conclusions—after visual examination of the structures—indicate that the test will tend more to confirm established concepts rather than develop new ones. In brief, the test indicated that:

- Buildings designed for earthquake resistance have substantial blast resistance.
- Far greater blast danger to building occupants comes from broken glass, doors, window shades and other easily detached components than from structural damage.
- Utility poles and towers that are guyed survive atomic blasts better than unguyed installations.
- Underground piping is highly resistant to blast damage.

Installations were placed up to 3 mi from ground zero (the spot on the ground directly below the atomic explosion). FCDA officials pointed out that no direct comparison of building types was intended. The main purpose of the test was to show what will happen to typical buildings under an atomic attack.

Detailed analysis of the results of the test are being made by technical experts. This might result in improved designs, but neither FCDA nor AEC has given any indication when detailed reports will be made public.

• **Houses tested**—Five kinds of typical residences were subjected to the blast. The buildings were tested in pairs; one of each type was located close enough to ground zero so that major damage might be expected and the other at a distance where much less damage would result.

The types of houses were: a single-story, wood-frame, basementless building; a two-story brick exterior and wood-frame interior house with a basement; a single-story reinforced concrete block building; a single-story precast concrete slab building; and a two-story frame house with basement.

The reinforced concrete block and the precast concrete slab buildings were designed for earthquake resistance. None of the other buildings had special earthquake-resistant design features.

Except for the two-story frame house, one of each pair was positioned 4,700 ft from ground zero and the other at 10,500 ft from ground zero. One of the two-story wood-frame houses was 5,500 ft from ground zero and the other 7,800 ft from the explosion.

An overpressure of 4 psi and 2½ psi was expected at the positions of the two-story wood-frame houses. The houses 4,700 ft from ground zero probably were subjected to blast pressures in excess of 4 psi perhaps, 800 to 1,000 psf.

The one-story wood-frame house and the two-story brick-faced house at 4,700 ft were almost completely destroyed. The one-story house had a reinforced concrete bomb-shelter bathroom that remained intact.

Both of the houses designed for earthquake resistance—the precast concrete house and the reinforced concrete block house—remained intact at 4,700 ft. In the precast slab house, all windows and doors were blown out, and many of the window frames were torn loose. Some concrete spalling could be seen where wall and roof units were joined by welding steel inserts.

The concrete blocks immediately below a large, front window opening were bowed slightly inward. This might indicate that lack of height adversely affected the reinforcing of the block assembly.

At 10,500 ft, there was no noticeable structural damage to the two earthquake-resistant buildings. Here again, windows and doors were torn loose, and debris completely covered the interiors.

The one-story frame house and the two-story brick veneer house at 10,500 ft both suffered severe structural damage but remained standing. Both these buildings could be repaired to make them suitable for occupancy.

The two-story frame house was similar to a design tested in 1953, except that its design had been improved to provide greater blast resistance. At 5,500 ft this house remained standing, but its condition was not suitable for repair.

Most of the roof was blown off, and a large percentage of the floor joists failed despite the fact that floor-joist size had been increased over the original design.

Its twin at 7,800 ft also suffered severe structural damage. Its condition, however, was such that it could be made suitable for emergency shelter by shoring and minor repairs.

In all probability, anyone in any of the 10 houses would have been killed by flying glass and debris. But basement shelters in the two-story buildings could have been adequate for preservation of life.

• **Industrial buildings**—A second major phase of the FCDA program included a test of three pairs of typical metal industrial buildings, plus a specially designed reinforced gypsum structure developed by Union Carbide and Carbon Corp. to protect delicate controls.

The gypsum building was located 5,500 ft from ground zero. It showed no primary structural damage. All of the front plastic window and a small portion of the rear plastic window was blown out. Small permanent deformations of the steel frame were noted, and there was minor cracking of the gypsum walls and minor scaling on the face nearest the blast.

The three pairs of metal buildings were designed and furnished by Reynolds Aluminum Co. (using a Butler Manufacturing Co. product), Armco Drainage and Metal Products, Inc., and the Behlen Manufacturing Co. All were mounted on concrete foundation beams. One set of the three buildings was located at 6,800 ft from ground zero and the other set at 15,000 ft.

(Continued on page 22)

. . . Atom test

The Reynolds building had a welded and bolted steel rigid frame covered with light-gage aluminum. The Armco building was partially self-framing with walls of light-gage steel interlocking shapes. The Behlen building consisted of deeply corrugated metal panels bolted together to be self-framing.

All of the buildings at 6,800 ft from ground zero were severely damaged. The steel frames of the aluminum-covered building remained standing but were distorted away from ground zero with delections of about 1 ft at the eaves. The aluminum wall panels were stripped from the front wall along with most of the supporting girts and purlins.

The Behlen building at 6,800 ft was severely distorted but all of the pieces remained bolted together. The building still offered good protection from the elements. The front slope of the roof was crushed downward at midsection about 1½ ft.

The Armco building at 6,800 ft was in a state of almost complete collapse and could be considered unusable and unsalvageable.

At 15,000 ft, the roof and wall panels of the aluminum-clad building were dished inward. On the front face, the center girts were torn loose from the columns and aluminum panels were disengaged from bolt fasteners.

The Behlen building at 15,000 ft suffered little structural damage. The door and windows toward the blast were blown in.

The Armco building at 15,000 ft was seyerely damaged. Most damage centered around the front wall panels which were buckled inward from 1 to 2 ft at the center. The roof panels nearest the blast were slightly bent.

• **Utilities**—Extensive tests of gas and electric utility installations also were included. There were no water works installations involved in the tests, but the gas tests included underground piping and vaults that were similar to water works facilities.

Some of the underground gas piping and valve pits were located as close as 1,470 ft from ground zero. But in spite of being that close to the blast, there was no noticeable damage to the underground piping.

Typical electrical distribution systems were erected at 4,700 ft and 10,500 ft. There was no damage at 10,500 ft, but at 4,700 ft several wood poles were broken off at or just above ground level. The poles that remained standing were guyed in the direction of the blast. Unguyed steel transmission towers also failed at 4,700 ft.

Combine Is Low Bidder For Oahe Tunnel Work

Mittry Constructors of Los Angeles, the firm that pioneered the use of a continuous miner to tunnel through the soft rock at Oahe Dam on the Missouri River (ENR Jan. 13, p. 26), apparently lost out in bidding for the first Oahe job where specifications made machine mining necessary.

The firm, bidding as a combine with Peter Kiewit Sons Co. of Omaha, ranked seventh from low when Army Engineers opened bids at Pierre, S. D., on construction of the downstream flood control tunnels for Oahe Dam.

Apparent low bidder was a group of contractors headed by Foley Brothers of St. Paul. The combine's bid was $5,823,292. Government estimate was $5,396,186.72.

Other members of the group are Winston Brothers Construction Co. of Minneapolis, Donovan Construction Co. of St. Paul, C. F. Lytle of Sioux City, Ia., and Missouri Valley Construction Co. of Leavenworth, Kans.

Eleven bids were submitted. The Mittry bid was $6,656,535. High bid, by the Western Contracting Corp. of Sioux City was $7,738,590.

The job calls for constructing the downstream 1,665 ft of the six tunnels. Bore is 22 ft. The downstream tunnels will lack by 200 ft making juncture with the upstream tunnels being excavated by Mittry under a $9-million contract. This intervening block will be taken out under contract, now being readied, to excavate the vertical control shafts.

Specifications for the downstream tunnel contract prohibit the use of explosives. This makes mandatory mechanical removal of the shale in the tunneling operation.

BOCA: Amend Building Codes

Building Officials Conference of America suggests changes in Codes to bolster civil defense and ease parking problem

A number of changes in building codes to bolster civil defense and ease off-street parking problems were suggested at the 40th annual meeting of the Building Officials Conference of America in Milwaukee.

Milwaukee's Mayor Frank Zeidler told the building officials that the possibility of massive damage to U. S. cities made it necessary for states and municipalities to amend building codes to require fire and blast-resistant construction.

"The building official who daily fights blight and ugliness will see in this an opportunity to rebuild his home city to meet the requirements of defense but also to let light and air into districts of congestion and decay," Zeidler said.

Walker S. Lee, of New York City, Commissioner of the New York State Building Code Commission and chairman of BOCA's disaster committee offered a seven point program for cutting down casualties and damage in case of disaster. His recommendations were based on a study of major disasters in the U. S. during the last year. They were:

- Establishment of training programs for occupants of buildings to familiarize them with the equipment and procedures in emergencies.
- Provision of additional stairways, fire escapes and other exit facilities.
- Elimination of interior sleeping rooms without windows.
- Elimination of dead-end hallways.
- Separation of buildings into sections by the use of fire doors.
- Provision of fireproof partitions around stairways.
- Strict enforcement of all laws relating to building codes and safety.

To ease parking problems, the conference suggested changes in building codes to allow erection of parking structures without exterior walls of unlimited height—subject to zoning limitations—when built of reinforced concrete or fireproof steel.

The BOCA code also was changed to increase the maximum area in some non-combustible types of construction.

In addition, limits were removed for two classifications of structures not more than one story in height.

A resolution adopted by the conference warned municipalities that they must act to retain competent building officials who are being induced to leave municipal positions by the higher pay scales offered by industry.

The conference chose Arthur N. Rutherford, West Hartford, Conn., to succeed Arthur J. Benline, New York City, as president. Other new officers elected were: William G. Wharton, Richmond, Va., first vice president; Frank C. Roe, Clayton, Mo., second vice president; Norman G. Fricke, West Hartford, Conn., treasurer; and S. Logan McConnell, New Orleans, La., secretary.

Army Plans Arctic Tunnels

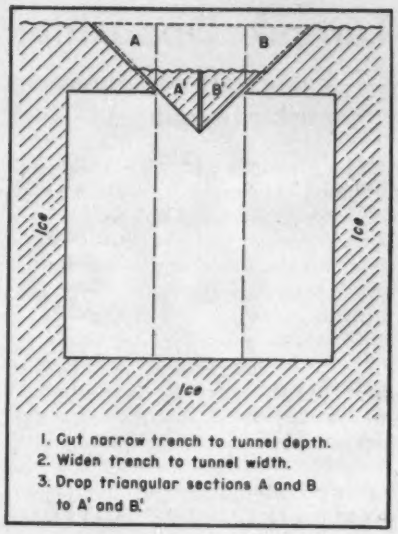
Engineers devise method of building subways through snow to provide safe, convenient, low-cost roads in Greenland

Army Engineers have devised a new technique for building highways in the distant, snow-bound Arctic at cost far less than the average cost of building rural highways in the U.S.

The idea is to build subways or tunnels just under the surface. It will be tested this summer on Greenland's icecap. Engineers believe they can build these tunnels with standard snow-removal equipment and without any imported building materials—which would have to be brought in by air at high cost.

The attractiveness of the idea is obvious. Surface travel in the Arctic is always difficult, often impossible. "The sub-surface tunnel plan," an Engineer said, "has been tentatively proposed as a means of avoiding the serious problems of weather, navigation and trail-marking."

At the outset, the Engineers expect to build about 15 mi of these tunnels in Greenland. But if they test out as expected, it's possible that hundreds of miles of tunnels will be built to connect the separate buildings within each base and to provide highways between bases.



• **How it's done**—One of these Arctic highways will be built this way:

The first step is to dig a trench—it might be 3 ft wide and 15 ft deep. Then, a 12x12 ft tunnel is dug out with equipment that blows the chipped ice and snow out the overhead slot.

Finally, the 3-ft opening in the roof of the tunnel is closed by slicing off triangular blocks of snow on either side and allowing them to slide downward until they close off the opening. Snow and wind will quickly fill in the ditch that remains on the surface, and pressure and cold will seal the roof into a single block of ice.

The Army Engineers will send a 240-man expedition to the Greenland icecap this summer to work on this tunnel idea and similar Arctic problems. Previous studies have tested the pressure, density, permeability and other characteristics of Arctic ice.

The task force to Greenland is under the command of Lt. Col. Elmer Clark. It is made up of six other Engineer officers, two warrant officers, 172 enlisted men and 60 scientists.

Only about 10 men of the task force will work full time on the tunnel idea. The others will study such engineering problems as ice ramps, crevices, ice cliffs, the building of experimental roads and airfields and the construction of sub-surface structures such as warehouses, garages and hangars.

For several years, Army Engineers have maintained a network of experimental tunnels, trenches, corridors and shafts in the Greenland icecap. On one occasion, they tunneled down to a depth of more than 150 ft to test the pressures and movements of ice about structures.

They learned that snow tunnels contract vertically at a rate of approximately 6 in. a year. This will make necessary periodic trimmings of the walls of the Arctic highways if they become a reality.

Call Bids on Bonds

The Tacoma, Wash., Public Utilities Board has authorized a call for bids on a $15-million bond issue to start construction of the Mayfield hydroelectric dam on the Cowlitz River. Bids for the bonds are expected to be opened next month.

Coliseum Formwork Collapses

At least 16 workers injured—none critically—in collapse of formwork for main exhibition floor of New York building

Nearly 10,000 sq ft of formwork for the main exhibition floor of the New York Coliseum collapsed May 9 while concrete was being cast in the first of 15 bays.

At least 16 workmen were injured, none critically, according to first reports. As ENR went to press, a search was still under way for a few men not accounted for.

The floor that collapsed was of metal-pan construction.

Plywood forms supporting the pans were in turn supported on two tiers of shores 22 ft high. The bottom tier consisted of wood posts spaced about 2 ft center-to-center with one line of horizontal bracing in two directions. The upper tier of supports consisted of adjustable pipe shores with no intermediate bracing.

There was no sign of diagonal bracing in the shoring that remained standing after the collapse.

Observation of the scene shortly after the collapse indicated that concrete had been cast into the first of the 15 bays covered by the formwork. City police, building officials and engineers representing the owners and contractors swarmed over the scene.

• **Showplace for city**—Being built to replace the now outgrown Madison Square Garden and to serve as a convention and show center for New York City, the Coliseum is being erected on a block-square site facing Columbus Circle and the southwest corner of Central Park between 58th and 60th Streets.

The front—or east—face of the structure is to consist of four stories of exhibition space over a two-story garage. The main exhibition floor—the one where formwork collapsed—would form the second floor of this exhibition area, providing a total of 88,000 sq ft of exhibition space plus lobbies, offices and storage areas.

The rear of the site is to be occupied by a 20-story office building.

Owner of the structure is the Triborough Bridge and Tunnel Authority. Architects are Leon and Lionel Levy of New York; general contractors are a joint venture of Walsh-Fuller-Slattery, all of New York City.

California Road Needs

The cost of correcting existing deficiencies in California's state highways, county roads and city streets is set at $4,813,114,842 in a report submitted to the California legislature by the Senate Interim Committee on Highways, Streets and Bridges.

A breakdown compiled by the committee follows: state highways, $2,984,354,000; city streets, $1,236,614,824; county roads, $592,146,018.

Highway Hopes Dim

Senate and House appear headed for a stalemate over roadbuilding plan

The Senate Public Works Committee this week shelved President Eisenhower's highway program and reported to the Senate, instead, a bill sponsored by Sen. Albert Gore, Tennessee Democrat, calling for the expenditure of $18 billion over the next five years.

The committee's action dimmed prospects for congressional approval this year of a stepped-up program of federal highway aid. While Sen. Gore's bill has strong Democratic support in the Senate, nothing like it is even under consideration in the House of Representatives.

In the House, hearings on the Administration's 10-year, $101-billion roadbuilding program are scheduled to continue until June 2. Observers believe the Administration program has far stronger support in the House than in the Senate.

Whatever highway legislation the House finally approves is almost certain to be so different from the bill that went to the Senate this week that compromise will be difficult. A complete stalemate on highway legislation this year is a possibility.

The Gore bill proposed to continue financing federal aid for highway construction out of regular appropriations. It suggested a one-cent a gallon increase in the federal tax on motor fuels, but legislation to make this effective would have to originate in the House.

Before approving the Gore bill the Senate committee modified it to meet objections raised by a number of state governors and highway departments. It liberalized the state-federal matching formula so that the federal government would bear 90% of the cost of building interstate highways—instead of 75% as the bill originally proposed.

The maximum amount authorized for federal highway aid, however, remained the same so that the effect of the change in the matching formula was to reduce total federal and state highway spending under the bill from $21.7 billion to just over $18 billion. State expenditures would be reduced by the difference between the two figures.

For interstate highways, the bill authorized outlays of $8.6 billion during the five-year period. The federal government would put up $7.7 billion of this total, and the states would provide $861 million.

For primary, secondary and urban roads, the bill would authorize a total expenditure of $9 billion to be shared 50-50 by the federal government and the states.

The bill also authorizes federal outlays of $405 million for park, forest and other roads financed by the federal government.

TurnpikeOpposition

Route veto law threatens Michigan toll-road plans

The Michigan Turnpike Authority's proposed 113-mi Rockwood-Saginaw toll-road project was put in jeopardy last week when the lower house of the state legislature adopted a measure giving municipalities veto power over turnpike routes.

A recently recommended route for the $164-million turnpike would slice through the center of Dearborn and cut across Detroit suburbs. Although opposition developed at many points along the proposed route, it was the legislators from these two municpalities who spearheaded the bill to victory in the lower house.

• **Governor may veto**—If the Senate follows suit, Gov. G. Mennen Williams is expected to veto the measure. He said: "If the legislature desires to repeal the Turnpike Act, it should do so directly and not indirectly."

"We feel that if that bill becomes law, it will cramp MTA to the extent that we can't build a turnpike," a spokesman for the Turnpike Authority declared upon hearing that the measure had passed in the House.

William E. Slaughter, Jr., chairman of the Turnpike Authority, had complained bitterly that the bill would place final route decisions in the hands of councilmen and others.

• **Another threat overcome**—The embattled Turnpike Authority, meanwhile, apparently had staved off still another challenge to its toll-road project. This came from Michigan State Highway Commissioner Charles M. Ziegler, who recently proposed that the turnpike be dropped in favor of a Detroit-Bay City freeway. The superhighway proposed by Ziegler would be an extension of the Lodge Expressway in Detroit, and would virtually parallel the proposed turnpike route north of Detroit.

However, it appeared last week, following a discussion between Slaughter and Ziegler, that the latter's counterproposal was not going to materialize. Earlier, Slaughter and three other members of the Turnpike Authority offered to go out of business if Ziegler's plan was actually an early possibility.

To Build Schools

Two firms plan to offer prefab components for low-cost school buildings

From private enterprise has come two new propositions for helping communities solve their classroom shortage.

National Homes, the country's leading producer of prefabricated houses, is preparing to supply its dealers with prefab components for school construction to meet initial needs in new home developments. Wood wall and roof panels will be manufactured at the concern's Lafayette, Ind., plant.

In Boston, a new venture known as Structo Schools Corp. has been organized to design and build low-cost school buildings from standardized parts and finance construction for school districts on a lease-purchase arrangement.

Structo is the result of almost four years of research by a group of bankers, educators, and interested public officials working with the Boston architectural firm of Anderson-Nichols & Co.

The corporation will market an all-steel expansible building that can be constructed of modular components available on the general market. Layout of the building, designed and tested by Anderson-Nichols, is said to permit ready adaption to any site.

Tentative operating procedure calls for use of local architects, contractors and subcontractors on Structo projects. Also, where possible, local financial interests would participate in financing.

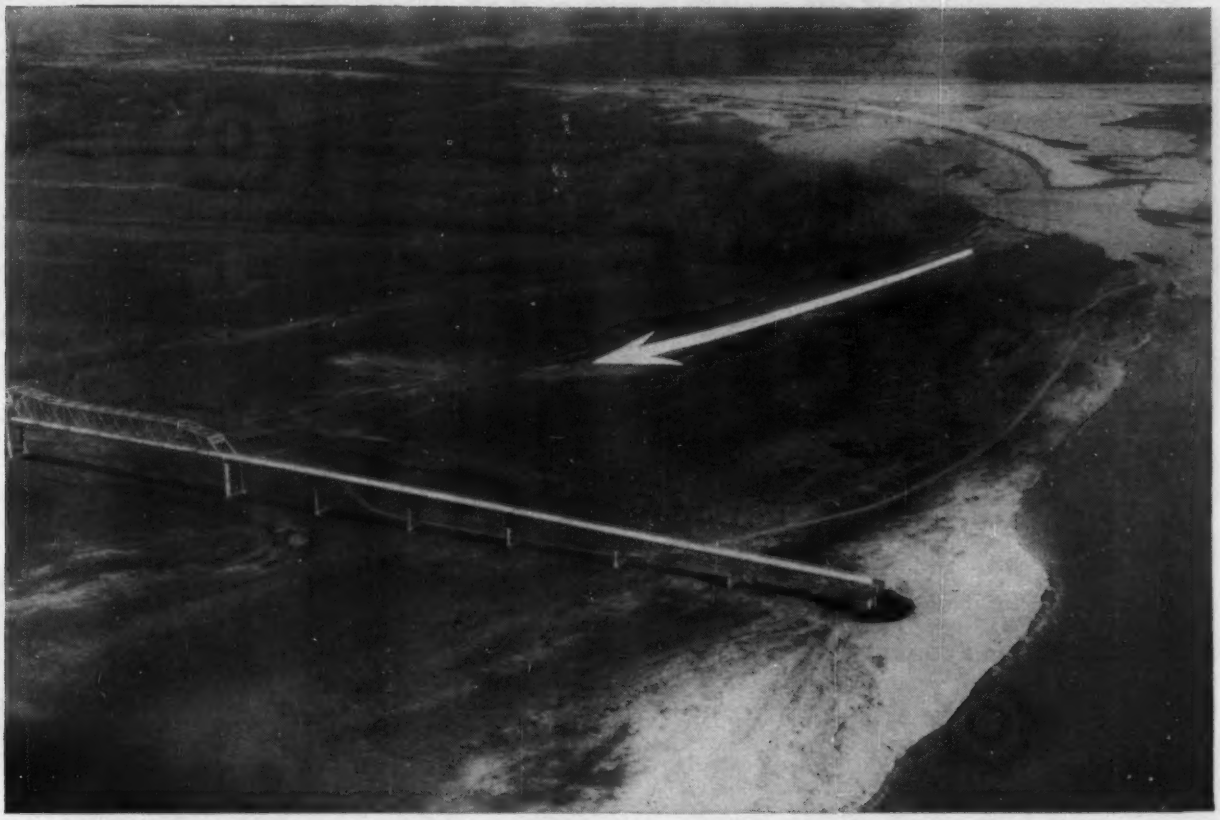
The corporation would endeavor to arrange financing for a 20- or 30-year period with the local school district acquiring title to the building when bonds are paid off, as in the case of state and local school building authorities now operating in several states.

As required, the corporation would provide a number of specialized services, including educational consultants and financial advisors. The corporation also plans to equip the schools.

The structure generally will be erected on a slab on the ground. It will have a light steel frame with open-web roof joists and a light-gage steel deck covered with an insulated, 20-year bonded builtop roof.

The exterior walls will consist of steel-sandwich panels with a porcelain exterior finish and painted interior finish. Interior partitions will be painted steel-sandwich panel.

Structo Schools Corp. has opened an office at 1 State St., Boston, under the direction of William J. Deegan, Jr., who recently resigned as city manager of Quincy, Mass., to become executive vice president of the firm.



CAPRICIOUS MISSOURI RIVER refuses to return to its old channel (arrow) and flow under the Decatur, Neb., bridge. But Army Engineers and contractors are . . .

Bringing the River to the Dry-Land Bridge

Nebraska's "Bridge to Nowhere" shortly will have a river to cross.

For some years now, the $2-million structure has stood forlornly to the east of Decatur, Neb., bridging an expanse of meadow land and scrub growth, its eastern terminus a sandbar some distance away from the right bank of the Missouri River.

It wasn't always that way, of course. Immediately after World War II, when local citizens first talked of the bridge, the Missouri actually flowed where the main span of the bridge now stands. But in 1946, the river cut itself a new channel to the east.

Engineers confidently built the bridge where originally planned in the belief that the river would return to its former channel in due time. They figured they could save about $400,000 in construction costs by building the bridge in the dry.

But the river has given no sign of returning. And the dry-land bridge has been the subject of heated debate in Congress as well as locally (ENR Feb. 28, 1952, p. 26).

• **River, come back**—Now, with two contractors driving piles, dredging, and placing quarry rock, Army Engineers are working to force the Missouri back where it belongs.

This action will restore some farmland to Iowa, and more importantly from the view of Decatur citizens, make it possible to collect some tolls on the bridge to begin paying off the $1.97-million bond issue that financed construction.

It's no easy task to say "move over" to a stream like the Missouri. For many years, Army Engineers have moved the river gradually by making use of some of the enormous load of silt that it carried. Piles were driven into the stream bed athwart the river's course, and sedimentation built up bars that forced the stream over—in due time.

But now the "Big Muddy" is no longer so muddy. Only a few years ago, an estimated 130 million tons of sediment moved past Omaha each year. Upstream dams now are in the process of reducing the amount of sediment to an estimated 20 million tons a year.

With less sediment available, Army Engineers have developed a new technique of turning the river. Two contractors—Cunningham-Kiewit Co. of Omaha and Connor-Stavely Co. of Kansas City—are using dredges and land equipment to construct what amounts to a huge levee that will become the left bank of the stream in its new (or former) location.

The levee will be held by a pile bulkhead, faced with machine-placed rough quarry limestone whose roughness is expected to create enough turbulence to force the main current some distance away from the embankment itself.

A third contractor—Missouri Valley Dredge Co. of Omaha—is cutting a $320,500 pilot canal 2 mi long, 80 ft wide and 12 ft deep to guide the river back under the bridge when the levee is closed.

And the state of Iowa has announced that it will build a 10-mi highway to the bridge as soon as the river is out of the way.

E. G. Stephenson, chief of the rivers and harbors branch of the Missouri River Division office of Army Engineers, said the new method has these advantages:

• **Economy**—The new method averages out about 25% cheaper than the old. Comparative savings have run to as much as 50%. Controlling factor

OLD METHOD of nudging the river over employed pile dikes pointing into the river like the teeth of a comb and depended on sedimentation to divert the flow.

NEW METHOD leads the river into its new channel (outlined by white lines) by a pile bulkhead faced with machine-placed rough quarry rock. It's both cheaper and quicker.

is the availability of rock close to the site.

• **Time savings**—A major project can be completed in one, or at the most two, seasons—an average of about half the time required with the old method. At the St. Joseph, Mo., cutoff, the first major use of the technique, work started July 20, the pilot canal was opened Oct. 4 and all of the river's flow was through the new channel on Thanksgiving.

• **Flexibility**—Contractors can bring a wide variety of methods to bear on the job. They can excavate the trench for the rock in the dry. Or they can use dredges. They can work with land equipment in cold weather and turn to the use of floating plant in the open water season. Heretofore, most river work has been limited to the warm months.

• **Maintenance**—Cost is cut approximately in half. D.C. Bordurant, sedimentation specialist for the Missouri River Division office of Army Engineers, reported that not a single case of undercutting has occurred in mechanically placed revetments.

News Briefs . . .

Navy Lets Contract

The U. S. Navy has awarded a $10.8-million contract for construction of additional facilities at the Naval Air Station at Argentia, Newfoundland, to Merritt-Chapman & Scott Corp., New York, Johnson, Drake & Piper, Inc., New York, and Ayers, Hagan & Both Construction Co., Providence, R. I. The additional facilities include bachelor officers quarters, hangar and shops buildings, storage building, aircraft parking apron, approach lighting system and utilities.

Pipeline in France

Lubin, McGaughy and Associates of Norfolk, Va., will supervise the construction of a 400-mi pipeline in France to cost more than $500 million. French firms will build the pipeline which will carry fuel for American military installations in France and Germany. The job is scheduled to be completed in about 18 months.

San Francisco Bridge

California has enacted a law authorizing the State Toll Bridge Authority to spend $1.5 million to complete engineering work for a new San Francisco Bay crossing from Army Street in San Francisco to Bay Farm Island in Alameda. The bridge, together with approaches, is expected to cost about $30 million. Engineering and financial studies may be completed by October, and officials said plans have been made to issue revenue bonds for the project shortly thereafter. The new law provides that tolls on the San Francisco-Oakland Bridge may help pay the costs of the new crossing.

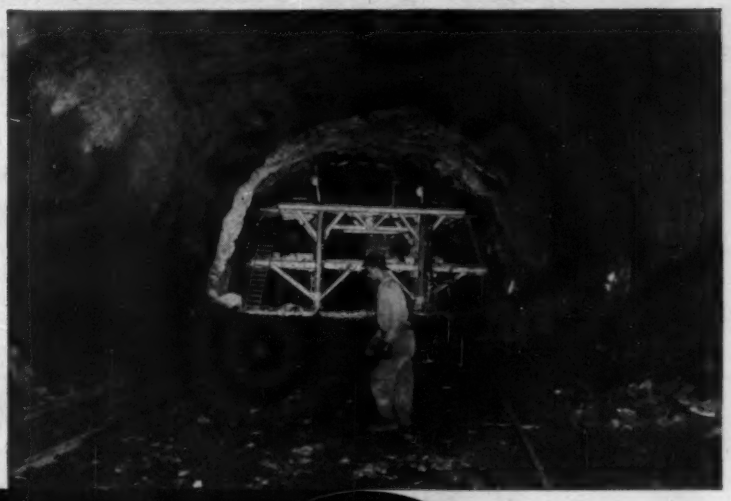
Voters Will Decide

The Rhode Island legislature has approved a measure to submit the largest bond issue in the state's history to voters. The $30 million of bonds would help to finance a $70-million highway construction program over the next four years. If approved, the bond issue would increase the state's net debt by 5%.

First Dixon-Yates Bids

Bids for the first actual construction on the $107-million Dixon-Yates steam generating plant at West Memphis, Ark., will be opened May 18 in the New York offices of Ebasco, Inc., architect-engineer for the project. The initial contract will cover grading, fill, piling and concrete foundation work.

Part way through the 705 foot rock section on the New Jersey side.



THEY'RE AVERAGING 630-FEET PER ROD

with

CRUCIBLE alloy hollow drill steel...

When completed the third tube of the Lincoln Tunnel will speed vehicular traffic between New York and New Jersey under the Hudson River.

On the New Jersey side construction involves tunneling through 705 feet of rock, and moving 24,000 cubic yards of trap-rock and sandstone. For this big job the contractors, Mason Johnson MacLean, chose Crucible CA Double Diamond alloy hollow drill rods. It proved to be an excellent choice, for in drilling 108,500 feet of hole, Crucible alloy drill rods gave an average of *630-feet per rod.*

There's good reason for this *extra* performance. For Crucible alloy hollow drill rods are made to *tool steel standards,* by the nation's leading producer of tool and other special purpose steels. You can count on longer rod life . . . fewer broken rods . . . *lowest cost per foot of hole drilled* . . . when you specify Crucible alloy hollow drill rods. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.*

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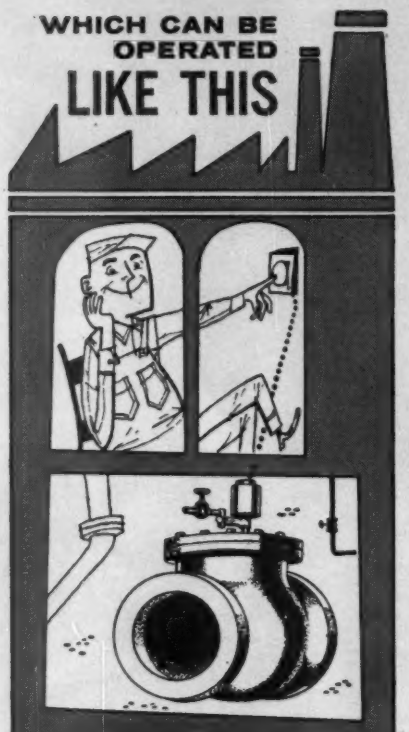

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CITY BY CITY

One Down, Two to Go

San Francisco—The Board of Supervisors has approved funds for the $1.7-million Ellis-O'Farrel garage—the 900-car project that has been serving as a test case for the Parking Authority's $18.7-million off-street parking program.

Construction of the garage has been delayed for two years. The city controller—worried about certain legal points—refused to certify funds for the project. The city's suit to force him to make money available set a court test in motion.

Last February the State Supreme Court ruled as illegal the Parking Authority's plan to condemn the property, then lease it to a party who would build the garage and set his own rates. (For background, see ENR Feb. 10, p. 28.)

As a result of the court decision, the city will control rates charged by the Ellis O'Farrell garage and any future Parking Authority projects.

Present plans call for lessees to bid for financing, construction and operation of the garage. The lessee will return to the city a certain percentage of gross profits, over a guaranteed minimum. Competitive features in the bidding will include the percent of profits promised to the city and the length of the term of the lease.

The lessee will submit the design for the garage, it must meet certain requirements governing the number and size of parking stalls, and type of construction.

Hartford, Conn.—By the end of this week the city's first pigeon-hole garage is expected to be in operation.

The privately-owned facility will hold 180 cars on six levels. It will operate automatically—two lifts will park the cars in cubicals and return them.

Meanwhile, the Parking Authority has announced plans for a summer start on construction of a seven-story pigeon-hole garage in the central business district. This unit, expected to cost some $413,000, will park 304 cars.

Downtown Redevelopment

Milwaukee—A $100-million downtown redevelopment plan proposes construction of a hotel, legitimate theater, shopping center and medical office building in the civic center area.

All of the buildings would be erected by the Downtown Development Corp., which will seek federal aid for redevelopment of the entire area. (Milwaukeeans own half the stock in the corporation, while the remaining shares are owned by Webb & Knapp, New York City.)

The proposed 420-suite hotel would be 20 stories high, cylindrical shaped, and cost about $7 million.

Most of the land involved in the proposed sites for the theatre, shopping center and medical office building is already city owned. But construction of the hotel will hinge on whether the Milwaukee Common Council will designate the area for redevelopment so that the site can be acquired by condemnation. Without power of condemnation, the hotel site can not be acquired at an economic price. The Redevelopment Corp. would like to lease the sites from the city for 40 years, with the property being deeded back to Milwaukee at the end of that period.

Meanwhile, the development corporation is planning construction of a new office building for the Beacon Federal Savings and Loan Assn. Its design features a tower 22 stories high.

Metropolitan Master Plan

Columbus, Ohio—A master plan for the future development of downtown Columbus has been outlined by planning experts.

These are some of the major recommendations made in a report by Harland Bartholomew & Associates, St. Louis:

- Replacement of Central Market with a 1,000-car garage, retail stores and offices.
- Construction of a new post office at the north edge of the business district.
- Provision for 19,913 more off-street parking spaces.
- Enlargement of the civic center by acquiring land between Front St. and the Scioto River.
- Enlargement of the Greyhound Bus Terminal to provide for waiting cars and taxis, and for ample bus storage.
- Relocation of the county courthouse in the civic center.
- Development of a medical center around Grant and St. Francis Hospitals.

In addition, the report suggested modifications of present expressway plans. This would include construction for six lanes instead of four lanes, and provision for more access.

The planners also proposed con-

(Continued on page 32)

PHOTO ANALYSIS
AND INTERPRETATION

THE PROOF OF THE PUDDING..

Mapped 4000 miles away—but when the survey party arrived at the spot the peat sampler brought up the proof—here was buried trouble exposed in time to save expensive changes in plans and location.

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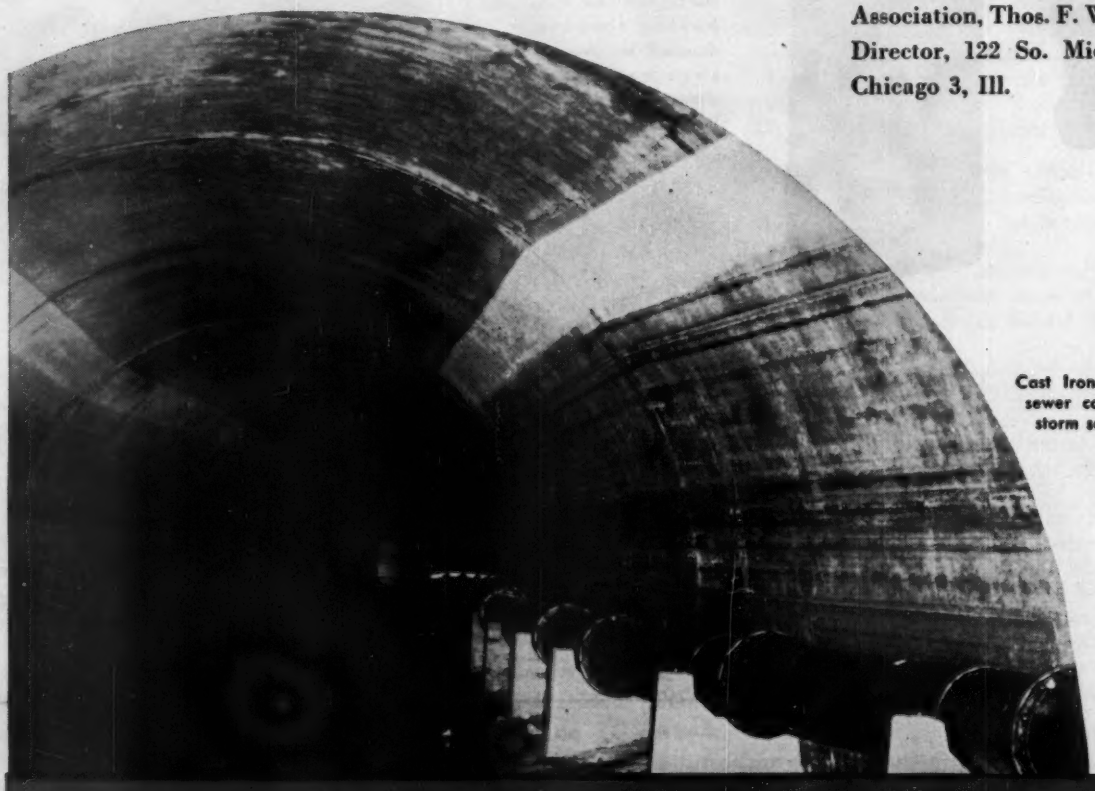
a TOUGH pipe for

Industrial waste and other piping for large manufacturer in suburban Chicago, Ill.

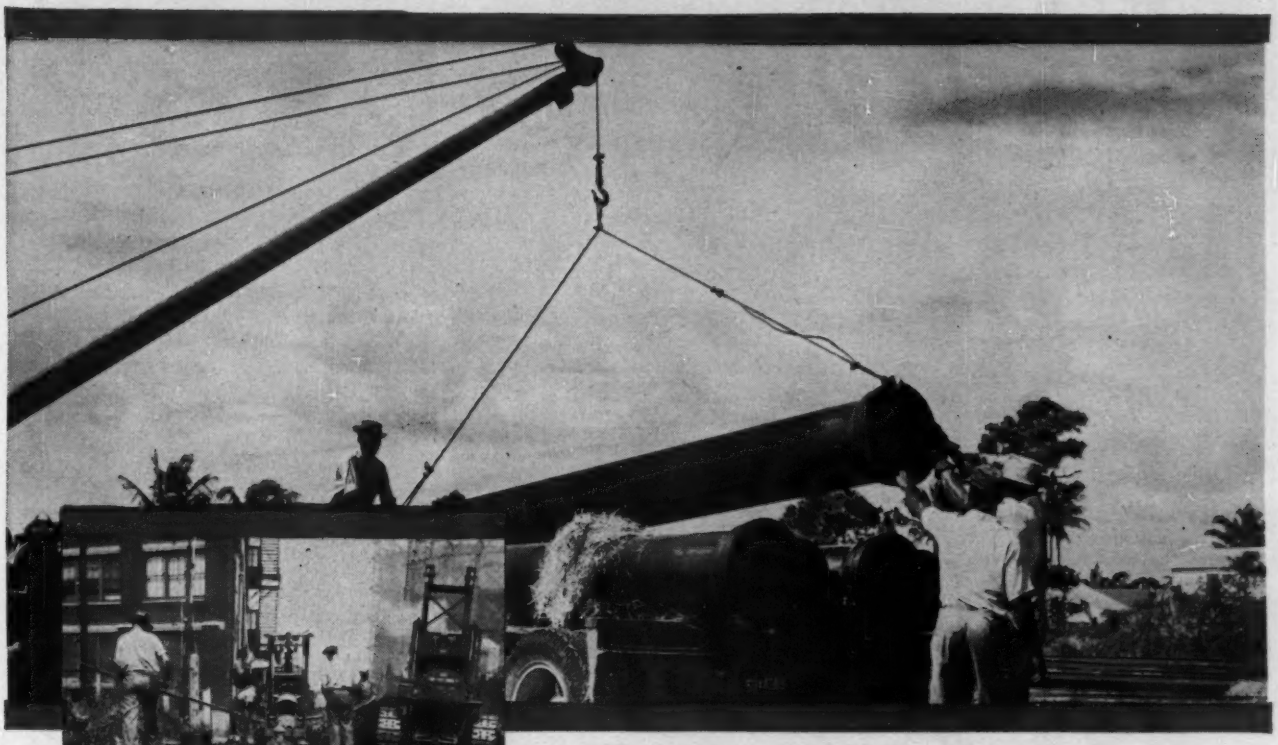
Cast iron pipe has been famed for centuries as a rugged material with proved ability to withstand beam, compressive and shock stresses. Today's *modernized* cast iron pipe—centrifugally cast—is even tougher, even stronger and more uniform in quality. Its effective resistance to corrosion, plus high strength factors, ensure long life, underground or underwater. When an engineer needs a tough pipe for tough requirements, his first and last thought are usually: *specify cast iron pipe.* For information write Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.



Cast Iron Pipe relief sanitary sewer constructed in existing storm sewer: Tulsa, Okla.

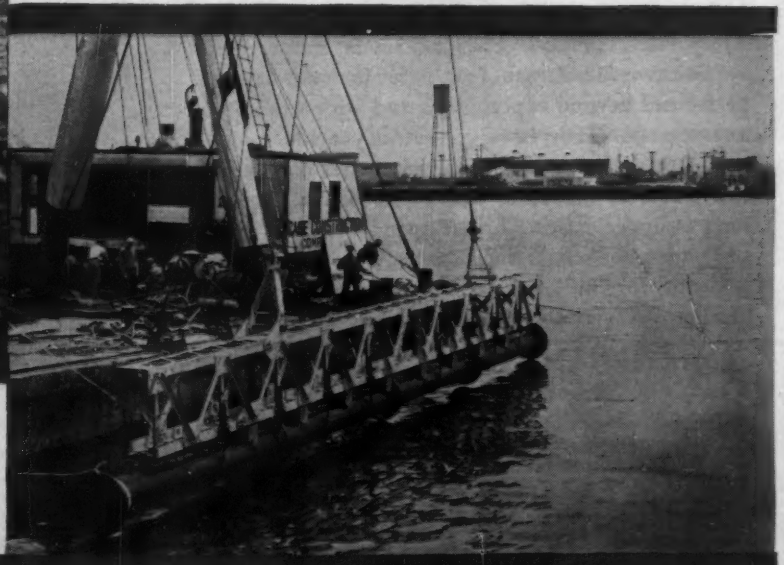
CAST IRON PIPE

TOUGH requirements



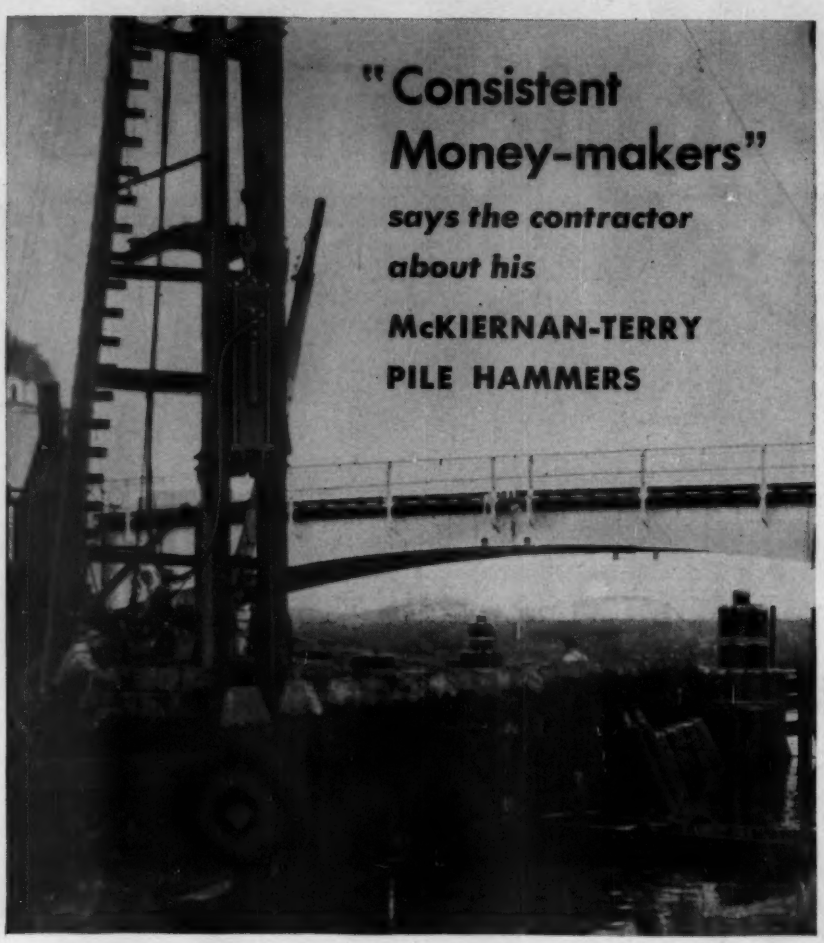
Unloading 16" Cast Iron Pipe for water supply system at Ft. Lauderdale, Fla.

Installing Cast Iron gas main in Chicago's North Side.



Cast Iron ball-and-socket joint water supply line being installed in channel bottom between Terminal Island and outer Los Angeles harbor.

SERVES FOR CENTURIES...



The Spence & Howe Construction Company of Port Arthur, Texas, is one of thousands of contractors who have profited by using powerful, fast-acting McKiernan-Terry Pile Hammers. President O. B. Hartzog reports:

"Our two McKiernan-Terry Pile Hammers have always performed beyond expectations and with a minimum of maintenance. They have consistently made money for us, particularly on jobs involving batter piles and difficult places to maneuver heavy pile driving equipment, such as under existing bridge spans, inside of buildings and close to existing refinery units."

Write for bulletins describing the money-making McKiernan-Terry Pile Hammers.

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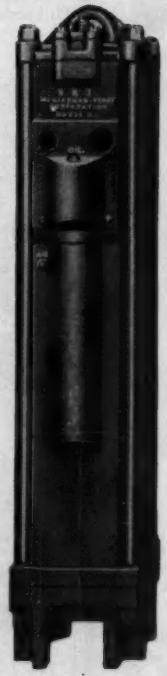

9B3 Double-Acting Pile Hammer, included in the McKiernan-Terry line of 18 sizes of double-acting and single-acting hammers and double-acting extractors

struction of more parking facilities. These would include 500-car garages along 4th St. at Gay, Oak and Long Sts.; 450-500 car garages on sites of existing commercial parking lots near Spring and Front Sts.; double deck garages at the north and south edges of the business district.

Community Newcomers

Chicago—Construction got under way last week on the first two of four proposed 21-story apartment buildings at Lake Meadows — New York Life Insurance Co.'s South Side community.

The Lake Meadow's Community is going up on a 100-acre site overlooking Lake Michigan. Five 12-story apartment buildings with 595 dwelling units already have been built, and the new additions are expected to be completed by late fall, 1956.

The two steel-frame buildings will contain 640 apartments expected to rent for around $28.50 per room.

Turner Construction Co. has been awarded the general contract for the apartment buildings. Skidmore, Owings & Merrill are the architects.

Public Housing Projects

New York City—The City Planning Commission has approved three federally aided public housing projects that will provide apartments for 2,830 low-income families at a cost of some $41.4 million.

The projects are part of a $225-million federal-city public housing program. This program calls for construction of nine federally aided projects providing 8,230 apartments for low-income families, and eight city-aided projects providing 6,685 apartments for middle-income families.

Two of the developments approved by the Planning Commission will be built in Manhattan and one will go up in the Bronx. They include:

- A 750-apartment project in East Harlem, to be built on a site bounded by Park and Madison Avenues, East 106th St., and East 110th St. Estimated cost: $10.2 million.
- The 480-apartment project Samuel Gompers Houses, to be built on the lower East Side on a site bounded by Delancey, Pitt, Rivington and Sheriff Sts. Estimated cost: $7.2 million.
- A 1,600-apartment project, to be built in the St. Paul's Place area in the Bronx on a site bounded by East 169th St., Park Ave., East 171st St., and third Ave. Estimated cost: $24 million.

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HANGAR AT MARCH FIELD, CALIFORNIA, in which double cantilever truss is identifiable by the large gussets. Its total length is 250 ft, and it cantilevers left and right from a central tower support. This is one of the Air Force's standardized hangars.

New Type Hangars Go Up Around the World

Double-cantilever type to shelter bomber maintenance requires steel erection jobs of size and precision

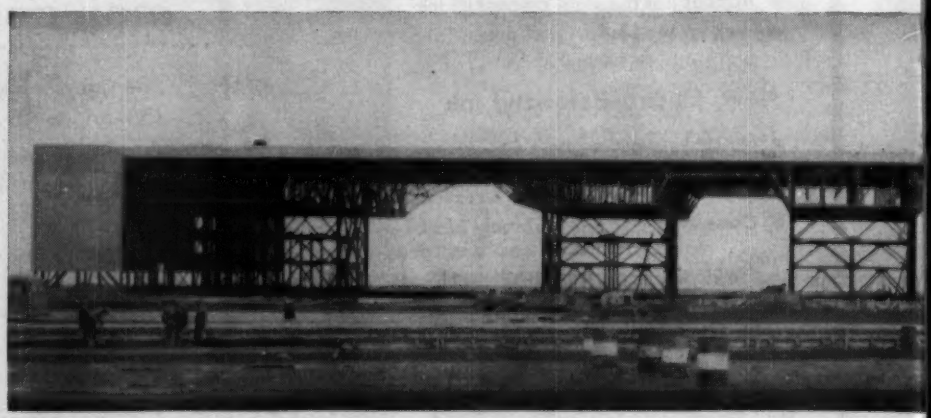
About four years ago the Air Force, as a part of a program of standardizing the designs for a number of its frequently repeated airbase structures, selected a design for a maintenance hangar that has since found application on some 20 sites both at home and abroad. The largest of the standard structures, the hangars are also of a novel design developed by the Kuljian Corp. of Philadelphia (ENR July 31, 1952, p. 42).

Known as double-cantilever hangars (by virtue of the fact that the main carrying trusses of the roof cantilever front and back from a central line of supports in the form of structural steel towers), the structures have a fixed width or depth (in the direction of these trusses) of 250 ft, and a length that may be varied to suit the size of bomber to be serviced. Thus the hangar with the maximum length of 600 ft is designated a heavy bomber hangar. Other lengths are 250, 350, 370 and 540 ft, obtained by using from two to four tower supports separated by trusses of any one of three different span lengths.

The longest trusses are of 120 and 100 ft spans, and are of arched type so as to furnish maximum vertical clearance at the center for the high tail assemblies of the planes. They are of three-hinged type since they are carried by the cantilever arms of the main trusses that run at right angles to them and are supported by the central towers. The third length of truss used is 60 ft. It is of parallel chord type and is simply supported.

The 250 ft length of the main carrying trusses is made of two 93 ft cantilevers, and a 63-ft anchor section over the supporting towers, corresponding to the width of the towers, which are either 60 or 70 ft long. The towers, in addition to serving as supports, are utilized to house shops, offices and toilets at different levels.

The hangars are equipped with roll-



BLEAK ICELAND, with its volcanic rock, was the scene for fast erection of this double-cantilever hangar whose 540-ft length includes two 120-ft spans and a 60-ft span plus

ing doors, in units 40 ft wide and 60 ft high, which in open position telescope into pockets at each end of the building. There are thus no obstructions for the full length front and back. End walls are of rigid insulation board, corrugated asbestos or of protected metal. Roof decks are of steel with rigid insulation on top.

To erect hangars of this size and type has required skill and precision of a high order, and although the methods used on all of them have been similar, there have been enough variations because of local conditions to warrant brief descriptions of three at widely separated sites—Iceland, the Azores and March Field in California.

Iceland Hangar

Robert F. Borg
Terry Steel Contractors, Inc.
New York, N. Y.

Preassembly of truss panels and erection without falsework were major factors in the high-speed construction of a standard double-cantilever-type hangar at Keflavik Air Force Base in Iceland last summer. The midnight sun did its part too, lighting long work days for top-notch American steel gangs who wished only to get the job done and go home.

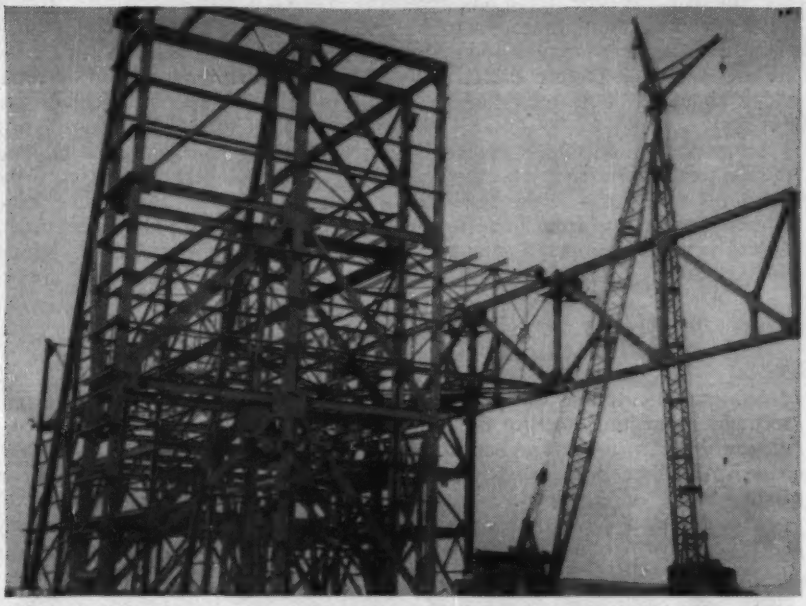
The hangar, one of two erected in 1954 by Terry Steel Contractors at bases in the Atlantic Ocean, is 540 x 250 ft in plan, the shorter dimension corresponding to the length of the main double-cantilever trusses. The second hangar, begun in the Azores after steel erection in Iceland was complete, has main trusses of the same span but is only 370 ft long.

The job in Iceland was complicated by the fact that the contract, while originally calling for completion in 457 calendar days, was revised to call for completion in 300 calendar days, because of changed requirements by the Air Force. As a result, the job was bid for a ten-hour work day seven days per week.

The foundations of reinforced concrete had been let to a local joint venture known as Associated Icelandic Contractors. The foundations were built on spread footings over hard packed soil and volcanic rock. The concrete was of a local aggregate with imported cement.

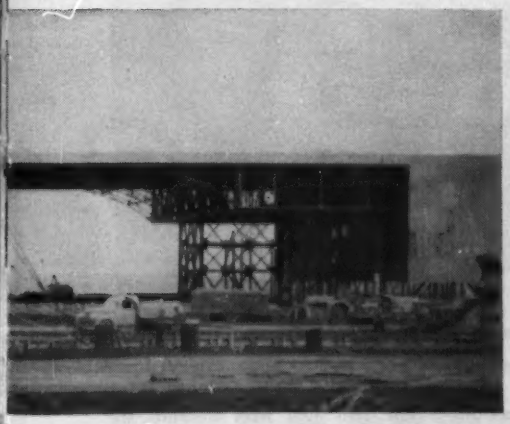
• **Stateside preparations**—While foundation work was being started, Terry began recruiting the personnel necessary for the overseas operation. Construction labor is available locally, but no Icelandic workers had the skill in steel construction demanded by this job. Various union locals in the United States were alerted to the need. Men who qualified obtained passports, and at the conclusion of necessary physical examinations and security questionnaires were flown to Iceland.

In the meantime, the equipment necessary to do the job was assembled in New York, put aboard Army transports at the Brooklyn Port of Embarkation and shipped to the port of

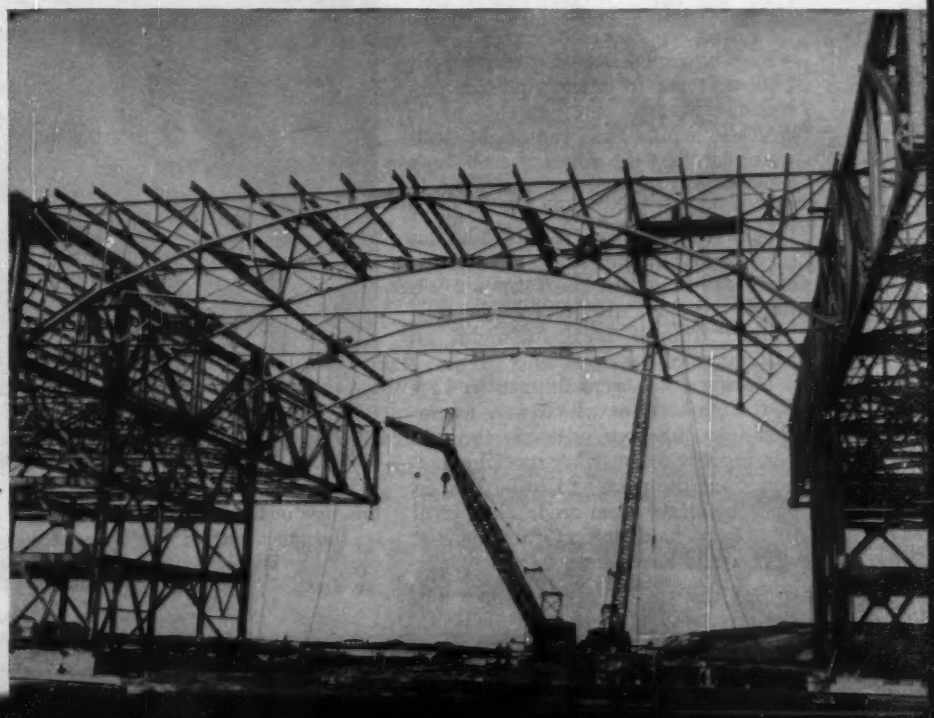


TWO CRANES are used to hold cantilever arm in place on Iceland hangar, while crews rivet it up, thus eliminating the need for time-consuming falsework.

ONE OF THE 120-FT BAYS (right) of the Iceland hangar being roofed over by the three-hinged arched trusses which frame into the double-cantilever trusses.



four supporting towers. The 120-ft gaps are spanned by arched trusses.



. . . Hangars

Reykjavik about 30 miles from the job. The amount of this equipment would have been greater had not the management joint-venture in charge of the air base construction—Metcalfe, Hamilton, Smith, and Beck Companies—made available to the contractor certain heavy equipment, such as cranes and welding machines, already on the jobsite.

Foundations were completed and erection of the 3,200 tons of steel begun in early spring, 1954. This timing permitted taking advantage of the lengthening days, which at the arctic circle reach a peak of practically 24 hours of daylight per day during the month of July.

Work began by the erection of an office wing and the door pockets. Towers for anchorage of the cantilever's then were raised, and the cantilever-truss fixed ends were erected atop the towers.

• **Cranes hold trusses**—In order to speed erection, a maximum amount of ground preassembly was done. Thus, the cantilever portions of the main trusses, weighing 42 tons, were lifted into place by two 30-ton cranes equipped with 80-ft booms and 15-ft jibs. These cranes held the trusses in place while they were riveted up, thus eliminating any need for unwieldy timber-tower falsework. There were about 400 rivets required at these locations.

After erection of adjacent main cantilever trusses, the 3-hinged arch trusses were erected to support the intervening roof. Filling in of the steel purlins and roof beams proceeded in sequence.

Metal sheeting was applied to the sides of the building by stud-welds, while the steel roof deck was fastened by tack-welding to the roof purlins.

• **Roofing sealed**—Roofing was five-ply built up type. In order to provide protection against the severe arctic weather, wind- and water-tight seals were placed at the edges of each day's roofing work. It was at this point in the work that advantage was taken of the long arctic day. A schedule was set up whereby the steel roof deck was erected during the hours from 6 am to 4 pm, and the roofers in turn worked from 4 until midnight, all without need for floodlights.

Hangar doors were shipped in 12 x 60-ft high sections which were assembled into the door units on the job. Glazing was a somewhat special operation since the glass had to be held in place by heavy steel angle clips until the putty hardened. Otherwise the wind would have blown out the panes.

• **Local conditions**—Although working in Iceland is no more difficult or conditions more severe than in portions of the United States, construction is complicated by the fact that the language is strange and modern materials and equipment are not available locally.

The weather, even at best, can change drastically without notice, and winds of 90 and 100 mph are not at all unusual.

The availability of local materials, other than concrete aggregates, is practically nil. Almost everything had to be brought from abroad and most of it came from the United States, although some small portions of materials were supplied by Western European countries.

Most men were housed on the jobsite in barracks-type buildings, and paid a nominal sum to the management joint venture for their room and board. A motion picture theater provided about the only recreation.

• **Azores next**—Immediately upon completion of the Iceland job, the key personnel were flown to the States for a brief vacation and from there to the Azores job. The temperate climate in the Azores was a distinct change from that in Iceland, but there were few problems in the Azores that had not already been mastered at Iceland.

One difference between the Azores project and the Iceland project was the fact that no heavy equipment was available locally in the Azores. It thus became necessary for the contractor to send his own cranes and compressors to the jobsite by means of military sea transport. It was decided, however, to send cranes with higher reach—90 ft booms and 30 ft jibs.

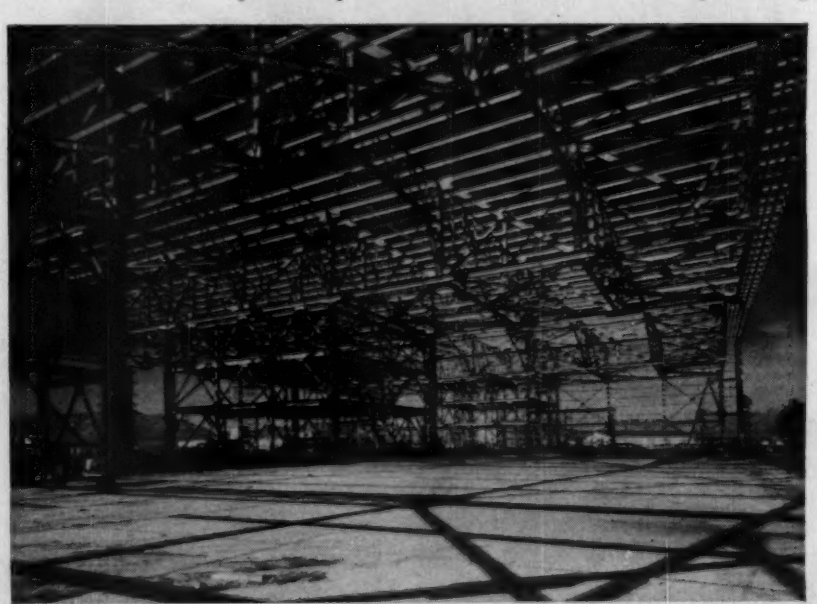
Again in the Azores use was made of local labor, but a great majority of the key personnel was American.

• **Management**—On both jobs the Terry forces were headed by Harry J. Terker, president of the firm. Richard G. Terker was chief engineer, Robert F. Borg, project manager, Philip A. Wolf, project engineer, Ward Cartee, general superintendent and William Lepreaux, field superintendent. In Iceland for the Corps of Engineers, North Atlantic District, Col. Aldo H. Bagmulo and Col. Ralph King were district engineers. In the Azores representing the Corps of Engineers, Atlantic District, was Maj. George Youngblood, district engineer.

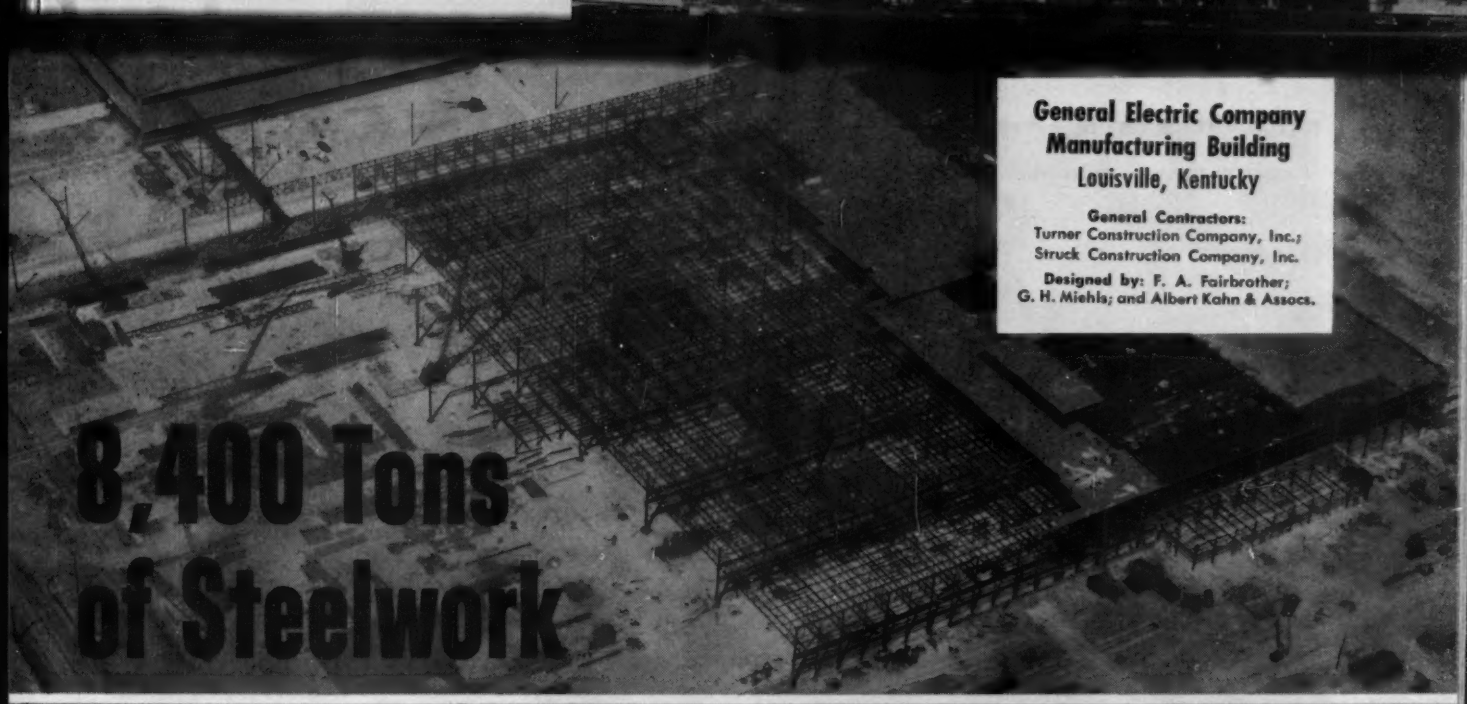
The California Hangar

Substantial emphasis was placed on accuracy in erecting steel for the double-cantilever maintenance hangar at March Air Force Base near Riverside, Calif. Speed of erection was also a vital factor as a tight time schedule on other construction phases required prompt completion of the steel frame. The steel work was accomplished in a 12-week period.

The 93-ft long cantilever arms of the main trusses were supported by single 12x12-in. timber shores during the time interval between positioning



WIDE OPEN SPACES provided by the double-cantilever type hangar are evident from this view of the March Field installation in California. A similar open area is provided on the other side of the central tower supports whose structural steel columns are encased in heavily reinforced concrete for fireproofing and extra lateral strength.



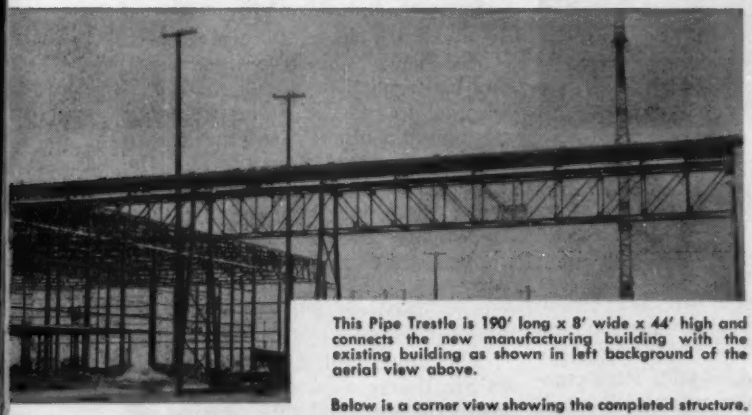
General Electric Company
Manufacturing Building
Louisville, Kentucky

General Contractors:
Turner Construction Company, Inc.;
Struck Construction Company, Inc.

Designed by: F. A. Fairbrother;
G. H. Miehls; and Albert Kahn & Assocs.

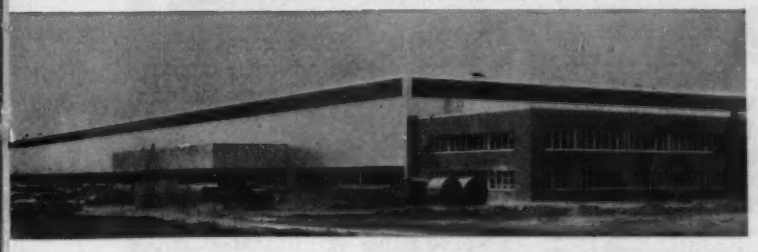
8,400 Tons of Steelwork

erected in 3½ months by AMERICAN BRIDGE



This Pipe Trestle is 190′ long x 8′ wide x 44′ high and connects the new manufacturing building with the existing building as shown in left background of the aerial view above.

Below is a corner view showing the completed structure.



● If you need a new mill, factory, warehouse, or office building in a hurry, American Bridge can fabricate and erect your structural steel requirements with dispatch.

As you see from the aerial view above, this new General Electric Company Plant at Louisville, was no small project! This view shows Manufacturing Building No. 5 which is the largest of five huge buildings being constructed at this project for the manufacture of General Electric Company's Major Household Appliances. Big as this building is, AMERICAN BRIDGE erected the steel framework, all 8,400 tons of it, in only three months and sixteen days!

This new manufacturing building is a special high level industrial structure, 700′ wide x 1,000′ long and with a 43′ clear height to the bottom chord of the main trusses. In addition, the building contains two intermediate mezzanine floors over a major portion of the area. Attached alongside the manufacturing building is a paint and oil storage building 36′ wide by 180′ long. AMERICAN BRIDGE also erected a pipe trestle 8′ wide x 190′ long and 44′ high connecting the new manufacturing building with a building previously constructed.

This new General Electric building and the pipe trestle are good examples of American Bridge fabricating and erecting "know-how." You can depend on AMERICAN BRIDGE to handle any type of steel-frame construction with thoroughness and speed . . . any time . . . anywhere. If you would like to know more about the advantages of having AMERICAN BRIDGE fabricate and erect the steelwork for your next building, just contact our nearest office.

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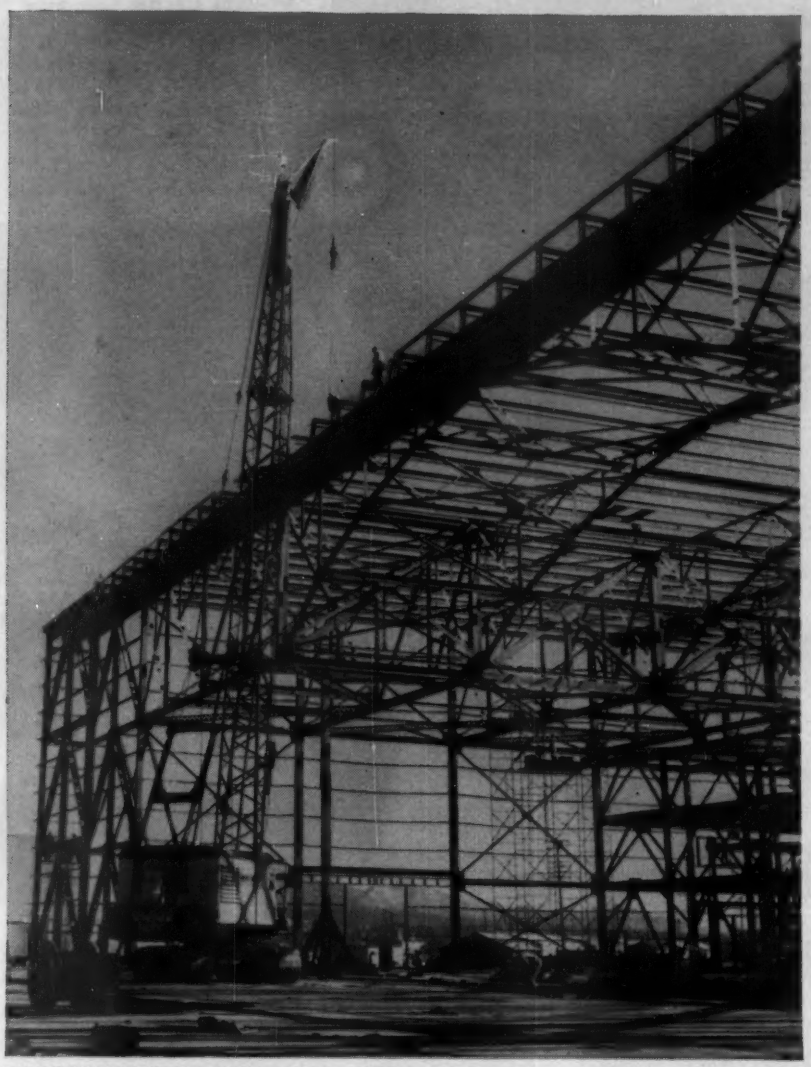


DOLLY-MOUNTED TIMBER SHORE (seen just to the right of the crane) supported one end of the 93½-ft cantilever arms during construction of California hangar. Crane operates on rubber belting to minimize damage to concrete.

. . . Hangars

and riveting the cantilevers. This gave time for accurate alignment of the trusses. And, as a result, no difficulty was encountered on fitting succeeding steel work.

Bids were opened in June, 1954, and a $2,168,576 contract awarded to Robert E. McKee, Inc., of Los Angeles. Completion is called for in July, 1955.

Immediately on award of contract, the contractor placed a steel order with Bethlehem Pacific Coast Steel Corp. Detailing and fabrication took several months. Steel erection started in December, 1954, and was completed by the end of February, 1955.

As there are many elements of building construction to be completed after the steel erection is finished, the general contractor attempted to do all possible work ahead of steel erection. For example, the contract called for two concrete aprons, 373x250 ft, and a small 75-ft wide taxiway. While these elements were being paved, the hangar floor slab was paved too. This was a decided aid in later steel erection work, but there was also the risk of damage to the concrete slab. To minimize such damage, crawler tractors were operated on rubber belting laid on the concrete.

The hangar at March AFB is slightly smaller in over-all length than the largest hangars of this type. It includes one 120-ft bay and one 60-ft bay. This together with two 60-ft long towers and one 70-ft long tower brings the hangar length to 370-ft. It can be expanded by addition of another 120 ft bay and a 70-ft wide tower.

In the transverse direction the three towers are all 63 ft wide. They support the double cantilever trusses that extend 93½ ft out from each tower. This makes total hangar width 250 ft. Guides for the full-height, self-supported hangar doors extend slightly further out. The three towers are, in effect, 3-story shop and office installations. But their prime purpose is to serve as support for the huge roof structure that provides so much column-free work room.

First element of steel erection was construction of the towers. Because these assemblies rise 66 ft above floor level, the steel erectors paid particular attention to their alignment since any error in positioning would make difficult the erection of the long cantilevers and the 3-hinged arches.

Next step was erection of the cantilever arms of the double-cantilever trusses. These were assembled on the ground and lifted in 93-ft, 40-ton segments. They were temporarily bolted to the towers and supported near the outer end by a single 12x12-in. timber shore. No riveting was done until the opposite cantilever arms were placed and the entire assembly carefully checked for alignment. This too was a precaution believed necessary to make succeeding work fit. The cantilever trusses were placed with an 8½-in. camber—needed to bring the trusses horizontal after placing of lateral bracing, connecting trusses and roof material. The timber shores were not removed until the bracing system between the cantilever arms had been placed, aligned and riveted.

Special rolling stands were devised to hold the long shoring timbers. These stands were in a tripod shape and had retractable wheels that could be used to roll the shores from one position to another. A jack mechanism lowered the timber away from the cantilever arm when shoring was no longer necessary. The wheels were then fixed, and the stands, with the timbers still erect were rolled by hand power to the next position. This saved several crane handlings of the long timber shores.

The short 60-ft trusses connecting to the towers were erected after the cantilever arms and their bracing systems were in place.

Finally, the 120-ft long, 3-hinged arch trusses were erected and found to fit perfectly. Exactness of fit is attributed to the care in which towers and cantilever truss arms were aligned.

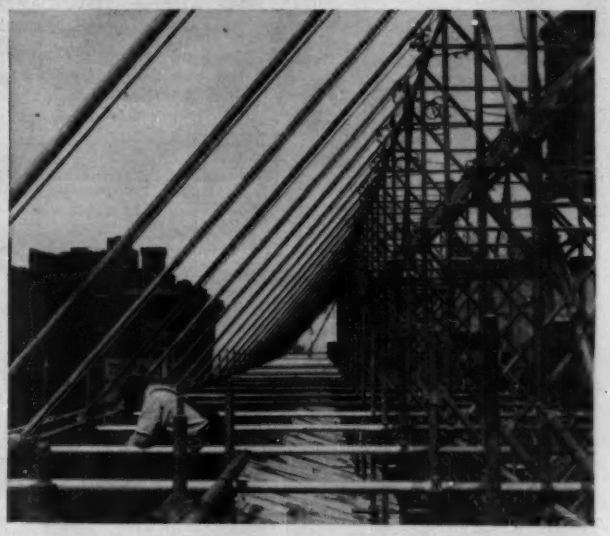
All steel was fabricated in Bethlehem Pacific Coast Steel's Los Angeles plant and trucked to the site. The 3-hinged arches were hauled assembled in half spans with only the bottom part of the lower chord omitted.

• **Towers heavily reinforced**—Several design features of the California hangar are also of interest. For example a heavy concrete encasement is used for the main column members

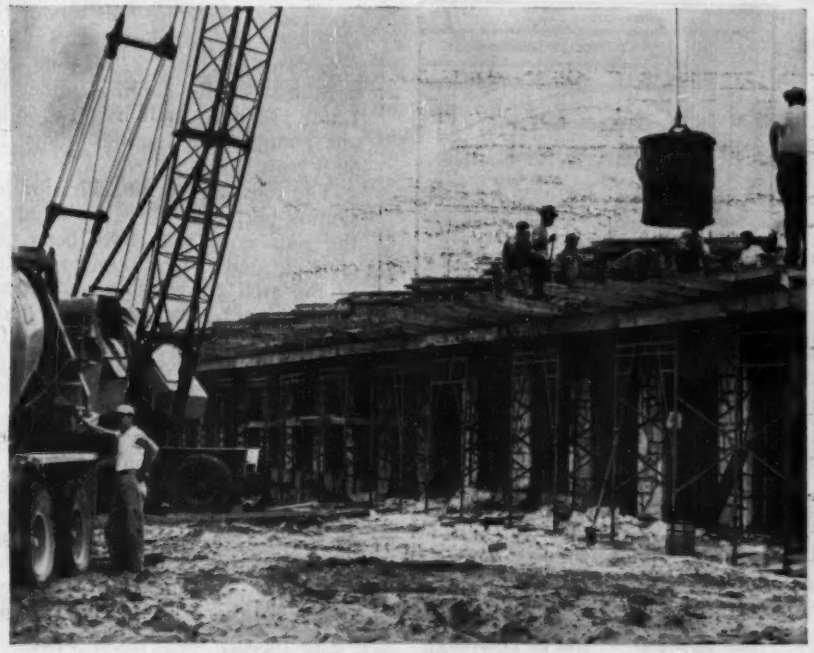
(*Advertisement*)

Scaffolding Methods . . . by Patent Scaffolding Co.

WITHIN EASY REACH—Separate 20"-wide platform, laid on sidewall brackets attached to "Trouble Saver"® Sectional Steel Scaffold, keeps materials easy to reach and men at most convenient working level. General contractor Damon G. Douglas uses this equipment for new elevator shaft at Hyatt Roller Bearing plant in Harrison, N. J.



OVER AND OUT—To remove cornice stones on an 18-story New York City building without disturbing a 6-ft. parapet wall, J. H. Taylor Construction Co. uses "TubeLox"® tube and coupler Scaffolding and cantilevered it 6 ft. beyond the wall. Steel cables, supporting a hanging, two-level "TubeLox" Scaffold below the cornice, run up over the framework and are anchored to the roof.



CONCRETE SHORING—Forms for the entire roof and all girders on the Northwest Dade Junior High School, Miami, are shored with 5'-wide "Trouble Saver" end frames, varying in height from 3' to 6'6". U-heads and extension legs in frame legs speed the installation of stringers. Thompson-Polizzi Construction Co., Miami, is the general contractor on this project. "Trouble Saver" Shoring, in addition to cutting shoring costs, provides a ready-made scaffold for stripping of forms or removing pans.

SEATTLE STONE—Four-story addition to the Bon Marche building in Seattle is faced with local cast stone by Bennett Campbell, Inc., general contractor. 88 6'6"-wide "Gold Medal"® Suspended Machines are used to scaffold two sides at a time.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

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Length of boom (standard)	16'6"	30'0"	30'0"	17'6"
Length of dipper handle	13'3"	---	---	6'0"
Overall length of crawlers				
—standard truck	10'2⅛" max.	10'2⅛" max.	10'2⅛" max.	10'2⅛" max.
—long & wide truck	11'9¼" max.	11'9¼" max.	11'9¼" max.	11'9¼" max.
Overall width of crawlers—				
Standard truck with 16" treads	8'0"	8'0"	8'0"	8'0"
Long & wide truck with 16" treads	9'4"	9'4"	9'4"	9'4"
24" and 30" treads optional on standard and long and wide truck				
Height of gantry above ground	9'8⅛"	9'8⅛"	9'8⅛"	9'8⅛"
Rear end clearance—maximum counterweight	8'11¼"	8'11¼"	8'11¼"	8'11¼"
Overall width of cab	7'10¾"	7'10¾"	7'10¾"	7'10¾"
Swing speed (R.P.M.)	4.2	4.2	4.2	4.2
Travel speed (high)	1.9	1.9	1.9	1.9
Capacity of fuel tank (gallons)	39	39	39	39
Approximate working weight	27,000	31,250 (with max. cwt.)	30,325 (with max. cwt.)	32,375

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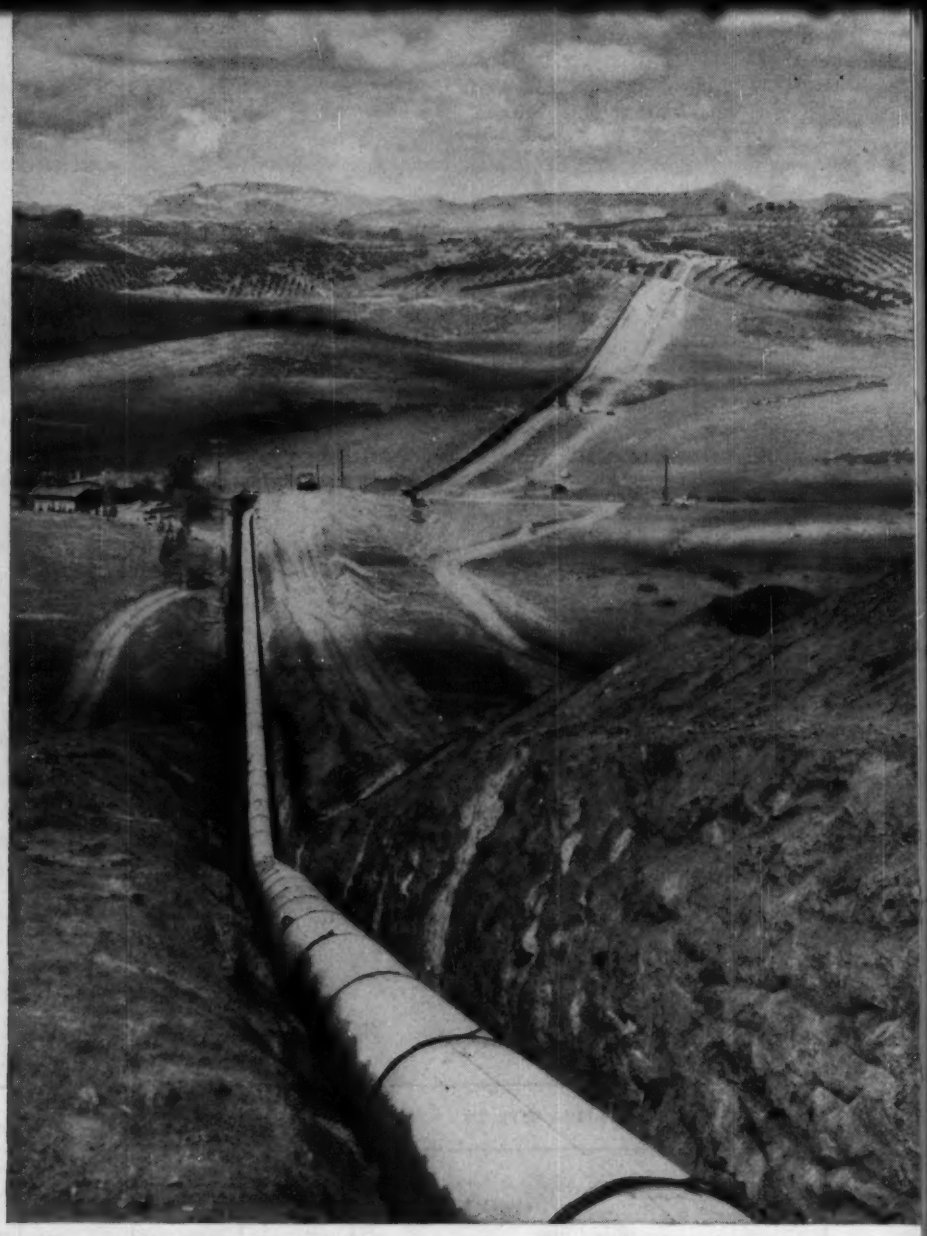
Explosives Research Pays Off



Blasting trenches in hard granite formations to install a pipeline in Southern California called for engineering skill, operating know-how, and a knowledge of explosives.

Over hills and valleys and across rivers and gorges, pipelines provide safe, sure, economical means of transportation for petroleum, natural gas, water, and other mineral resources. When rock is encountered, blasting crews with specialized explosives take over. Here is where explosives research pays off.

Continuous research and extensive knowledge of field conditions have been Hercules' business for more than forty years. Hercules technical representatives welcome opportunities to discuss problems and help in the selection of the right explosives and the most efficient methods for use in mining, quarrying, construction, and exploration projects.

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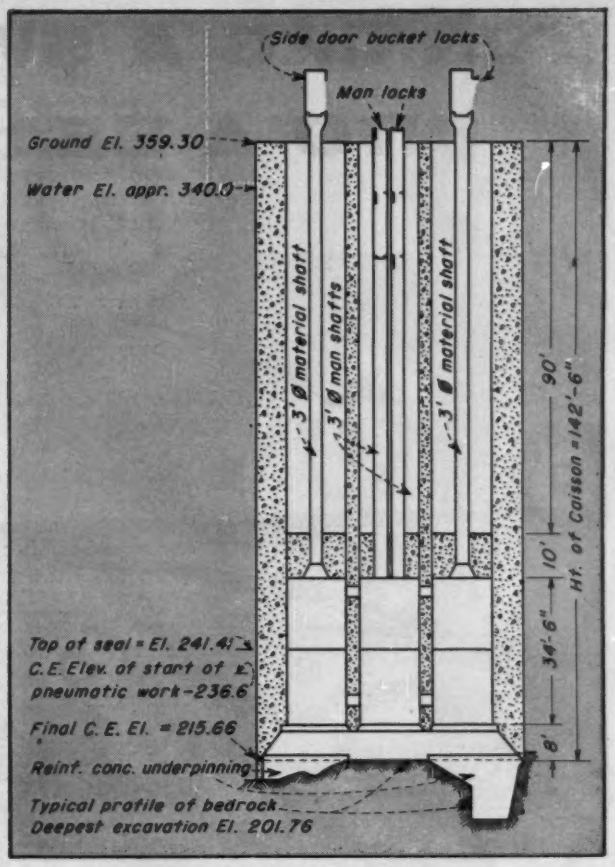

Pipeline Bridge Posed Foundation Problem

Twin 30-in. steel natural gas pipelines now snake their way 100 ft above the Mississippi River between Grand Tower, Ill. and Wittenberg, Mo., moving gently in cradles carried by one of the longest pipeline suspension bridges in the world.

Owned by the Texas-Illinois Natural Gas Pipeline Co., the $3.8 million, 3,690 ft suspension bridge (main span between towers 2,150 ft) is the first such crossing of the Mississippi, and the big mains it carries are designed to supplement the company's nearby underwater crossing supplying fuel to central Illinois.

And under the 296 ft high tower on the Missouri side lies a construction story: The placing of pier foundations down to 140 ft below the surface partially by pneumatic excavation. (On the Illinois side, by contrast, solid footing was found at 40 ft.)

• **Caisson going down**—Massman Construction Co., of Kansas City, under its $1.1 million substructure contract, started the 62x28 ft pier foundation as a dredged concrete caisson.

Since the original water level was about 19 ft below the surface, a full head of water would have made air work at the final depth impossible. Therefore, before sinking the caisson started, four deep wells were drilled about 35 ft outside the caisson perimeter. One of these (on the northeast edge) landed on a ledge of rock too high to be effective, and was abandoned. But the remaining three were able to lower the water table in the caisson area by 50 ft.

The caisson was built with four 36-in. circular steel materials shafts—the center two of which later become man wells for pneumatic work—and lowered by normal open dredging a distance of 122 ft.

It was discovered during the open dredging phase that the deep pumping wells, while in operation, exerted a braking effect on the caisson. Excavation could be carried well below the cutting edge without any resulting drop, but within minutes of shutting down the electric pumps, the caisson would settle to a natural resting place. Several experiments showed that the caisson could be stopped short of its natural level by re-starting the pumps.

• **Air work**—With necessary pressure at the 122 ft level at 22 psi, the contractor finished out the remainder of excavation to firm rock under air. Massman's crews under Merrill Cotten, project engineer, set to work.

When the air work started, a large amount of sand had to be removed by bucket through the materials shafts, until blowpipe connections could be installed. A pipe was attached to these connections, and the excess sand then removed by dry blow.

Below the sand, workers found a layer of rotten and stratified rock, and removed it with clay spades.

Two major deposits of this rotten rock were discovered: Removal of the upstream deposit left a "valley" in the bedrock about five feet deeper than the rock in the center of the caisson. In the downstream bay, the deposit ran down as much as 15 ft below the center.

When it was found inadvisable to lower the caisson any further into the bedrock, the sections of the cutting edge not bearing on firm rock were underpinned with a reinforced concrete wall, placed in short sections so that only enough of the sand bank was dug to permit work on one section at a time.

When the underpinning was completed, the remainder of the rotten rock was spaded up and removed by

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Naylor pipe is the perfect vehicle whenever a construction job calls for moving sand, gravel and water. Though light in weight, this distinctive lockseamed, spiralwelded pipe has the extra strength, leaktightness and safety that make it outstanding in dredging service. It's easy to handle, install and knock down—especially when used with Naylor one-piece Wedge-Lock couplings. For full details on Naylor pipe, fittings and couplings, write for Bulletin No. 507.

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buckets, equipment removed, and the bottom washed down.

• **Seal**—To start the seal, enough concrete was bucketed into the downstream bay to form a pad in the bottom of the "valley". Then a packed rooster sheave on top of the bucket lock was removed, and a concrete lock installed.

The remainder of the seal concrete (with the exception of the final 50 cu yd) then was placed through this lock and one on the upstream side. Concreting proceeded until the concrete in the two end dredge wells was up to grade. Then the center well was brought up to grade by placing the last 50 cu yd through the main locks.

Sandhogs worked under pressures up to 47 psi (maximum), working 45 minutes, resting five hours and 15 minutes, then working another 45 minutes.

Structural steel erection was under contract to U. S. Steel's American Bridge Division, and fabrication and erection of the two 12-in. wire rope suspension cables and two 2¾ in. wind cables and suspenders to U. S. Steel's American Steel & Wire Division. Texas-Illinois crews installed the 30-in. mains. Matthews and Kennan and Mitchell and Hunt, San Antonio, were engineers.

10-Year Power Program Set As Goal of Puget Sound Area

Members of the Puget Sound Utilities Council must invest a minimum of $670 million in new generating, transmission and distribution facilities by 1964, if they are to meet the growing power demands of the region.

New sources of power, proposed or already under investigation by firms comprising the council, appear to be more than adequate to meet the needs for new generating capacity in the next 10 years, according to a comprehensive power-economic survey of the Puget Sound-Cascade region of Washington State recently completed by Seattle Consulting Engineer Jack D. Stevens.

The program envisioned includes the Mica Creek storage project in British Columbia and the proposed Rocky Reach Dam, both on the Columbia River. Other projects are Seattle Light Co.'s Boundary Dam on the Pend Oreille River, Tacoma City Light's Cowlitz and Skokomish River developments and the Puget Sound Power & Light Co.'s further development on the Baker River.

Council members include these utility firms plus the Chelan and Skokomish County Public Utility Districts, operating in Washington State.

Stacks: How High Will They Go?

Arthur M. Clark
Assistant Chief Engineer
Custodis Construction Co., Inc.
New York, N. Y.

Air pollution has in recent years become a major public health, industrial, and political problem. Since air pollution comes largely from stacks or chimneys, and since the higher the chimney the better the dispersion and dilution of contaminants, let's look at today's pronounced trend toward higher stacks.

First, it should be noted that the best way to eliminate particulate and gaseous pollution from the atmosphere is to treat the stack or exhaust gases by one method or another to keep polluting elements out of stack discharge. In most cases this is very uneconomical, and it is reasonable to predict that except in areas of industrial concentration, tall stacks will be used for some time to discharge pollutants relatively high in the air.

Many factors must be considered in determining stack height from the standpoint of air pollution control. These are exit velocity of the gases, size and density of solid particles, temperature of the gases, predictable atmospheric conditions, and the surrounding topography including man-made structures. Recently wind tunnel studies have proven very helpful in determining necessary stack heights.

• **It was not always so**—Some 50 years ago, conditions around large smelters producing non-ferrous metals from sulphide ores became very bad. Management realized something had to be done if workers were to keep healthy and remain at their jobs and homes near the smelters. There were also problems of law suits by adjoining property owners. The growing concept of good public relations ushered in the era of tall stacks at metallurgical smelters, beginning with a 506-ft high perforated radial brick chimney with a top internal diameter of 50 ft built for the Anaconda Copper Mining Co. at Great Falls, Mont. in 1908.

During the next 20 years, many tall brick chimneys were built at metallurgical smelters in the U. S. and Canada, including several over 500 ft high. One of these was the giant 585-ft stack at the Anaconda Copper Mining Company's Anaconda, Mont., smelter. This chimney has a top internal diameter of 60 ft, and although no longer the tallest in the world, it is still the largest in existence from the standpoint of volume of masonry.

• **Concrete spurred growth**—During the 1920's the introduction of the water-cement ratio theory took away much of the mystery of concrete design and behavior, and reinforced concrete grew rapidly in favor. Chimneys were no exception, and large reinforced concrete chimneys up to 450 ft in height were built during the twenties.

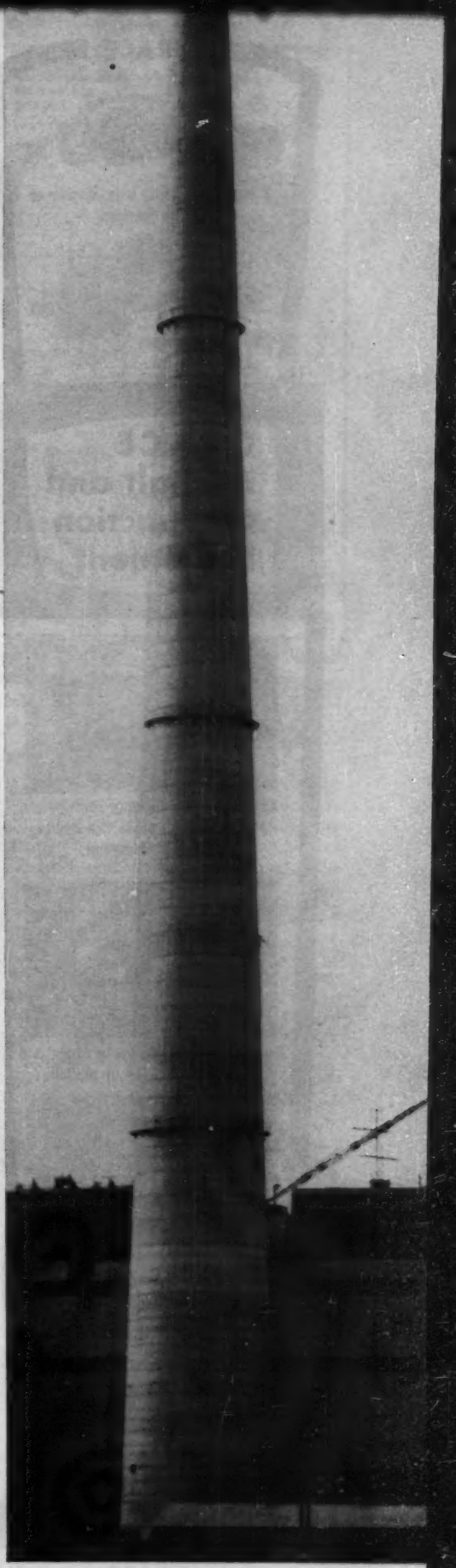
It became evident that for very tall chimneys, reinforced concrete was a much more economical material of construction than was brick masonry. In the early 1930's, mathematically correct design formulae for reinforced concrete chimneys were developed, and many tall, reinforced concrete chimneys were built: one 600 ft high at Selby, Calif., smelter of American Smelting & Refining Company; one 554 ft high at the Copper Cliff, Ont., smelter of The International Nickel Company of Canada; and one 550 ft high for the Cerro de Pasco Copper Corporation at Oroya, Peru, in the Andes Mountains.

In the 1940's a few very tall smelter chimneys were built including a 400-ft brick chimney for the United States Metals Refining Company at Carteret, N. J.—the tallest chimney on the eastern seaboard—and a 540 ft high reinforced concrete chimney for the Climax Molybdenum Company at Langeloth, Pa., in 1943. In 1949 a 525 ft high reinforced concrete chimney was built for Noranda Mines Ltd. at Noranda, Quebec.

• **And ever upward**—In the 1950's, tall chimneys resumed the upward trend. In 1950 a 606-ft reinforced concrete stack was built for the El Paso, Tex., smelter of the American Smelting & Refining Company. In 1954 a reinforced concrete chimney 637 ft high was constructed at a new plant built by The International Nickel Company of Canada at Copper Cliff, Ontario.

In the 1950's, the electric power industry entered the field of very tall chimneys. More and more cheaper fuels, having a high percentage of sulphur, were being used, and pollution of the surrounding atmosphere by sulphur dioxide became a problem.

In December, 1954, the first of three reinforced concrete chimneys 680 ft high was completed at the Clifty Creek plant of the Ohio Valley Electric Corporation at Madison, Ind., (right); the other two stacks are



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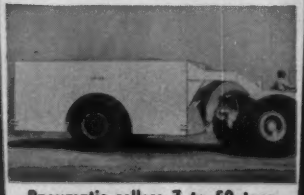

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now under construction. At the same utility's Kyger Creek plant at Cheshire, Ohio, the first of three chimneys 538 ft high was also completed in December 1954. The Madison chimneys are the tallest stacks ever designed and built. They are actually 707 ft high above their foundations, the lower 27 ft being below finished grade.

• **Where will it stop?**—With a chimney over 700 ft high now in operation, how much higher will stacks go? Where will this trend level off? The answer is in the realm of economics and public health, not in design considerations.

Consider, for example, the location of a new smelter or power plant. A tentative location in a valley is selected as rail (and perhaps water) transportation are available, and there is level space available for the storage of raw material or fuel. It is desirable or necessary, however, that the surrounding hills be free from objectionable concentrations of sulphur dioxide, and studies show that a 1,000 ft high stack is necessary to insure this. The planning engineer then from a standpoint of overall economics compares his tentative location including the first cost and maintenance of a 1,000-ft stack and its foundation with one or more less desirable locations where perhaps a much shorter stack would be satisfactory. If the advantages of the first location are found to prevail, then the 1,000-ft stack will be built.

Another possibility in the not too distant future might be the case of an oil refinery located in an area where meteorological conditions often produce temperature inversion. The refinery powerhouse burns residues from the petroleum refining process which are high in sulphur content, and its products of combustion are a major contributor to the smog, which settles in the area under the inversion. Assume that local ordinances are passed to control other contributors to the smog: Incinerator operation is suspended during periods of inversion; the local power company can operate its steam-electric station under light load conditions only during periods of inversion, and must draw on a hydroelectric distribution system during periods of peak loads; the main bus routes in the city are converted from diesel to electric trolley coach operation. The refinery is now on the spot. If its powerhouse stack were 850 ft high, it would discharge its gases above the trapping layer of cold air. The investment in the refinery is huge; it is strategically located from a commercial standpoint. Large quantities of steam are required in its process operations. The sludge, bottoms, and other residues used to fire its boilers have little or no market value. Legislators and citizens are clamoring for action. The refinery builds an 850 ft high stack to replace its present 250 ft high stack.

• **What's the limit?**—The structural design of very tall stacks or chimneys involves problems common to the design of all high structures—wind loadings, possibly earthquake shock, deflections, vibrations, expansion and contraction, foundations, and materials of construction. Peculiar to chimneys is the problem of internal thermal stresses and their combination with other stresses. The experienced chimney designer, however, possesses tools to design properly his structure, and experienced chimney erection firms have the know-how.

It is my belief that stacks will be constructed up to 1,000 ft high in the foreseeable future. A prediction that stacks will go higher than 1,000 ft would be hazardous; the economics of plant location or treatment of the gases to extract obnoxious elements would probably control if a stack higher than 1,000 ft were needed.

1955 Water Picture Looks Gloomy in California

Water conditions in California indicate that the water supply for 1955 will be much below average.

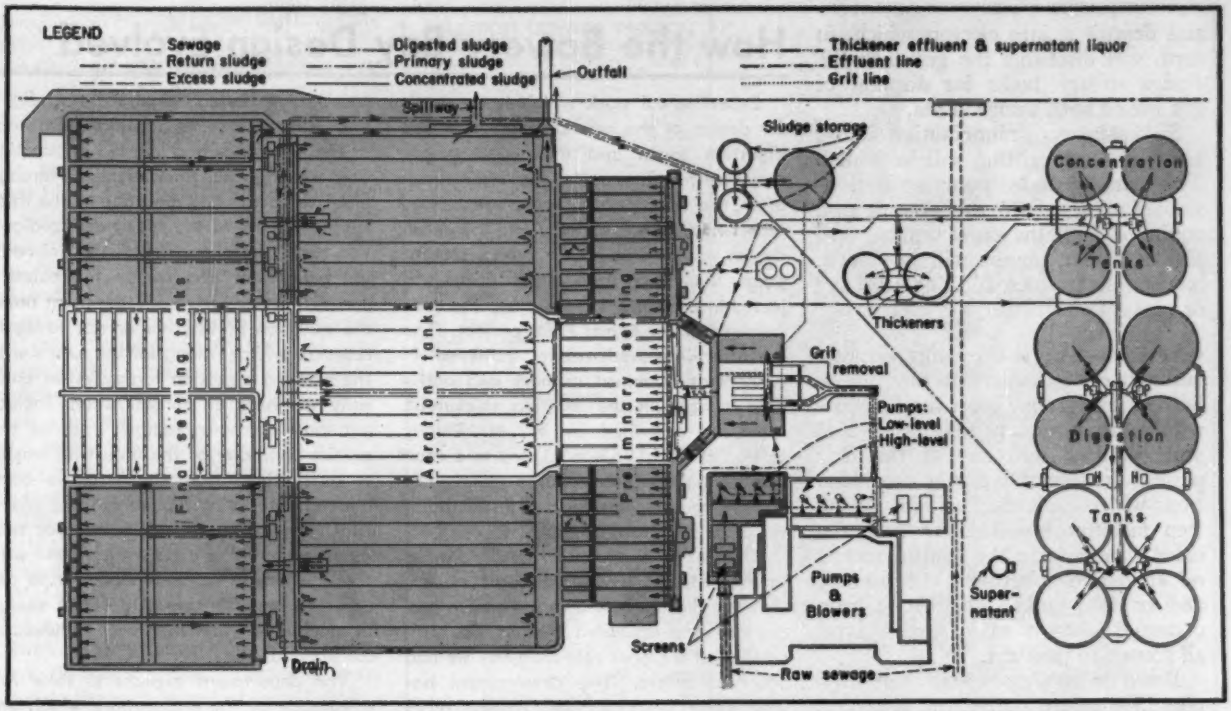
However, critical conditions are anticipated only in localized areas where development of conservation storage and ground water basins has not kept pace with growth. If the near drought conditions should continue through another season the water conditions would become acute in many areas.

This situation is cited by State Engineer A. D. Edmonston in his office's third water conditions report for 1955. Reports were issued February 1 and March 1 but the latest one offers the most gloomy picture.

From the standpoint of precipitation to date, the report notes, this year appears to be the driest since 1947.

Increased pumping from ground water basins supplemented by supplies conserved by facilities of the Central Valley Project and on the Colorado River, State Engineer Edmonston believes, will alleviate to a large extent the shortages in local surface water supply for irrigation in the Central Valley and south coastal areas.

Major conservation reservoirs serving areas in California had in storage on April 1 about 44% of their total capacity which is approximately 5,800,000 acre ft less than one year ago.



PLANT CAPACITY IS TO TRIPLE with completion of extension work now under way at New York City's Bowery Bay sewage works. Shaded areas denote new facilities which will revamp treatment to include latest advances including activated aeration.

Bowery Bay Sewage Plant—The Latest Word

New York City cashes in on its research—savings in digester size and cost realized by new design

William A. O'Leary
Director, Division of Sewage Disposal
Department of Public Works
New York, N. Y.

Bowery Bay pollution control project in the Borough of Queens, New York, is a project of great significance.

It is significant locally in that its extension, begun late last year, will be the last major element in a $119 million program started in 1948 as the first of two stages in complete clean-up of beach and harbor waters around New York City. It has even broader significance: The first use of radical new design of thickening tanks and sludge digesters—design born of intensive research.

New York City's Department of Public Works, with jurisdiction over pollution control, has handled this heavy chore of plant construction over the past seven years, while at the same time pushing research into improved treatment methods. This research has paid off—that's evident in the savings made in the Bowery Bay extension.

That the city, in its multimillion dollar plant construction program, could progress as it has while taking advantage of every usable new development in the art of treatment is a credit to the leadership of Public Works Commissioner Frederick H. Zurmuhlen and to Richard H. Gould, my predecessor as director of the Division of Sewage Disposal during planning, design and construction phases of the work.

The writer was project engineer on Bowery Bay in early planning stages, was later design chief of the division, and became director of the division of sewage disposal in 1954.

• **Existing plant**—The existing works with a design capacity of 40 mgd was placed in service in November 1939 on a primary treatment basis and in November 1942 the secondary treatment facilities were completed. Located on Bowery Bay, just west of LaGuardia Airport, its construction was coordinated with the opening of the New York World's Fair to clean up Flushing Bay and River.

Functionally, the plant provides screening with mechanically cleaned coarse and fine racks, pumping, grit removal in rectangular tanks after pumping, primary sedimentation, aeration and final settling, employing the principles of step aeration developed by Mr. Gould. There follow sludge thickening and digestion with power generation utilizing the sludge gas as fuel. Digested sludged is barged to sea.

The map on p. 51 shows the relation of the Bowery Bay Project to the City-wide plan of pollution control. The existing installed capacity of all treatment works is 806.5 mgd. The quantity treated in 1954 was 634 mgd. Total sewage flow is now about 1100 mgd.

• **Plant expansion**—The plant expansion will triple capacity—from 40 to 120 mgd—to equal sewage flows from an ultimate population of 1,000,000, including industrial equivalent population.

An eventual flow of 60 mgd is expected from new areas tied in while the flow from the presently connected west portion of the drainage area is expected to increase to 60 mgd.

• **New grit chambers adopted**—The existing battery of grit chambers consisting of three channels, each designed to carry 40 mgd, will be abandoned and replaced by two of the aerated type of sufficient capacity to handle the entire plant flow.

Each new tank will be equipped with swing-diffuser units to supply air for grit separation and with an overhead crane for grit removal. The diffuser tubes will be located four feet above tank floor to allow for sufficient depth of grit deposition and storage to permit clam-shell bucket removal. The cranes will be equipped with ½-cu yd clam-shell buckets to remove grit

and deposit it into ejectors which, in turn, will discharge the grit into the sludge storage tanks for disposal of grit mixed with sludge at sea.

Six primary sedimentation tanks same as those existing will be added. Two primary sludge pumping stations similar in design to the existing and equipped with the same number and size of sludge pumps will be added, one station for each additional battery of tanks.

• **Aeration**—The two existing aeration tanks are each divided into four passes. Settled sewage may enter the first pass with return sludge or may be divided and admitted into any of the four passes. Because of hydraulic considerations which limit the flexibility of the step facilities installed, we have decided to eliminate the venturi meters on all conduits between the primary and aeration tanks. There have been occasions when it was desired to send all sewage to pass #4.

Based on an average flow of 40 mgd plus 25% return sludge, the detention time in the existing battery of aeration tanks is 2.4 hours, assuming all sewage and sludge flows to pass #1.

Permanent facilities to chlorinate return sludge in order to control the growth of Sphaerotilus bacteria when using the modified aeration process are being installed.

Two additional batteries of aeration tanks will be installed. Each battery will handle 40 mgd of settled sewage plus 25% of return sludge on an average basis. The total maximum settled sewage capacity of secondary treatment will be 180 mgd.

• **Versatility built in**—The aeration units are designed to provide for the following treatment alternates: (1) step aeration, (2) modified aeration and (3) activated aeration— the latter process having been recently developed by A. Chasick, sewage treatment engineer in the city's Bureau of Sewage Disposal Operations. Excess activated sludge from a step-aeration battery is used as return sludge to a modified aeration battery.

How the Bowery Bay Design Evolved

Experimental work which is the basis for design of the new concentration and digestion tanks and their appurtenant equipment at Bowery Bay was undertaken after the preliminary project plans and report had been completed and the detail design was well under way. New rectangular thickening tanks had been projected in the early designs along the lines followed at the Hunts Point project. The radically improved results achieved in concentrating mixed primary and activated sludges in the existing thickening tanks as described by W. N. Torpey (ENR Oct. 22, 1953, p.23) led to a decision to abandon the proposed rectangular thickening tank design and install additional circular tanks instead.

The Design Bureau had hardly started in the redesign when it became evident that the digestion of concentrated mixed primary and activated sludges was proceeding at a higher rate than any we had observed before. This development has also been described by Torpey (ENR Oct. 21, 1954, p.26). Again a top command decision was made to eliminate four of the projected eight new digestion tanks. These had already been designed and integrated into the contract drawings and specifications.

Ironically, after considerable delay in redesigning the concentration and digestion functions so as to take advantage of the lessons we had learned in pumping and moving the thick sludges through pipelines, continued digestion of the thick sludges in one of the four existing digestion tanks with improvised external heating equipment and sludge recirculation pumps borrowed from another plant posed the question of whether or not to again redesign and get along for the future with the existing digestion tanks. After carefully weighing all considerations including some unknown factors, such as the precise character of the industrial wastes to be received from the industrial-commercial area being tapped in Long Island City, it was decided to build four new digestion tanks to the standards and with the equipment we feel necessary to dependably and continuously digest sludge at much higer rates than ever achieved in our previous experience.

The department expects to take full advantage of the implications which are apparent as a result of the full-scale and model high-rate digestion research at Bowery Bay in the design of digestion facilities for Newtown Creek (310 mgd in Brooklyn) and North River (220 mgd in Manhattan), major pollution control projects planned.

• **Air blowers, filters**—Four new centrifugal air blowers of 25,000-cfm capacity each will be installed in the existing pump and power house, and existing blowers will be abandoned. This will provide sufficient capacity with one blower out of service to deliver air at a maximum rate of 0.8 cu ft per gallon based on an average sewage flow of 120 mgd, leaving a margin of 7500 cfm for aerating channels and grit chambers.

Three electrostatic air filter units, each of 25,000 cfm capacity are installed in the existing pump and blower building. Space was left for a fourth filter now to be installed bringing the total installed capacity to 100,000 cfm thus allowing one unit as a standby under maximum air demand.

Two separate air filters will be installed in the basement of the power house to supply filtered air to the dual-fuel engine generators. Lacking these, air drawn from the basement would complicate the heating problem in cold weather.

• **Engine generators and power set-up**—Four 1,250-kw dual fuel engine generators will be installed replacing two existing 560-kw gas engine generators.

Auxiliary machinery and lighting loads will be connected permanently to the utility bus and also two sewage pumps in the existing or high level pumping station.

The power set-up contemplates the highest possible power generated from the available sludge gas. We have taken advantage of the latest development in engine design and will reduce the use of pilot oil for ignition to a minimum by the use of spark ignition.

• **Sludge pumps, existing and additional**—Three return sludge pumps serving the existing plant will have their capacities increased by modifications of the discharge piping so that the combined capacity of two of them will be about 12,000 gpm or 8.65 mgd each. This will provide a maximum return sludge rate of about 43% of

Design Details of the Plant Extension

Aerated grit chambers—2 27x59x14 ft swd. Designed for average 60 mgd, maximum 180 mgd.

Preliminary sedimentation tanks—6 124x50x12 ft swd (each 3 channels wide). One hour detention. Settling rate: 2,150 gal/sq ft./day.

Aeration tanks—2 batteries of tanks each 275x92x15 ft swd, each battery divided into 4 passes of 22 ft 3 in. net width; 2.46 hours detention at 120 mgd flow plus 50% return sludge.

Return sludge pumps—In each of 2 new stations: 6 1 to 4 mgd for step aeration; 4 ½ to 1 mgd for modified aeration; 4 ½ to 1 mgd for pumping excess sludge.

Final sedimentation tanks—2 batteries of 4 tanks each 211x50x12 ft 3 in. swd.

Sludge concentration tanks—4 70-ft dia, 10-ft swd with 7-ft deep bottom cone.

Digesters—4 81 ft dia; 197,000 cu ft volume each tank.

average sewage flow in the existing battery.

Additional return sludge pumping units will be installed, arranged in two stations, one to be located in an extension of the existing gallery between the south batteries of aeration and final tanks and the other to be located in a similar extension to the north.

These additional pumps will take suction directly from the final tanks instead of a well as in the existing plant, and will discharge through metered connections to the first pass of each additional aeration tank. New installed capacity will allow returns to each aerator ranging from a maximum of 8 mgd (40% of the average sewage flow) with two of the large units in each station as stand-bys.

The additional excess sludge (raw, unthickened) pumps are also to be located in the same extension.

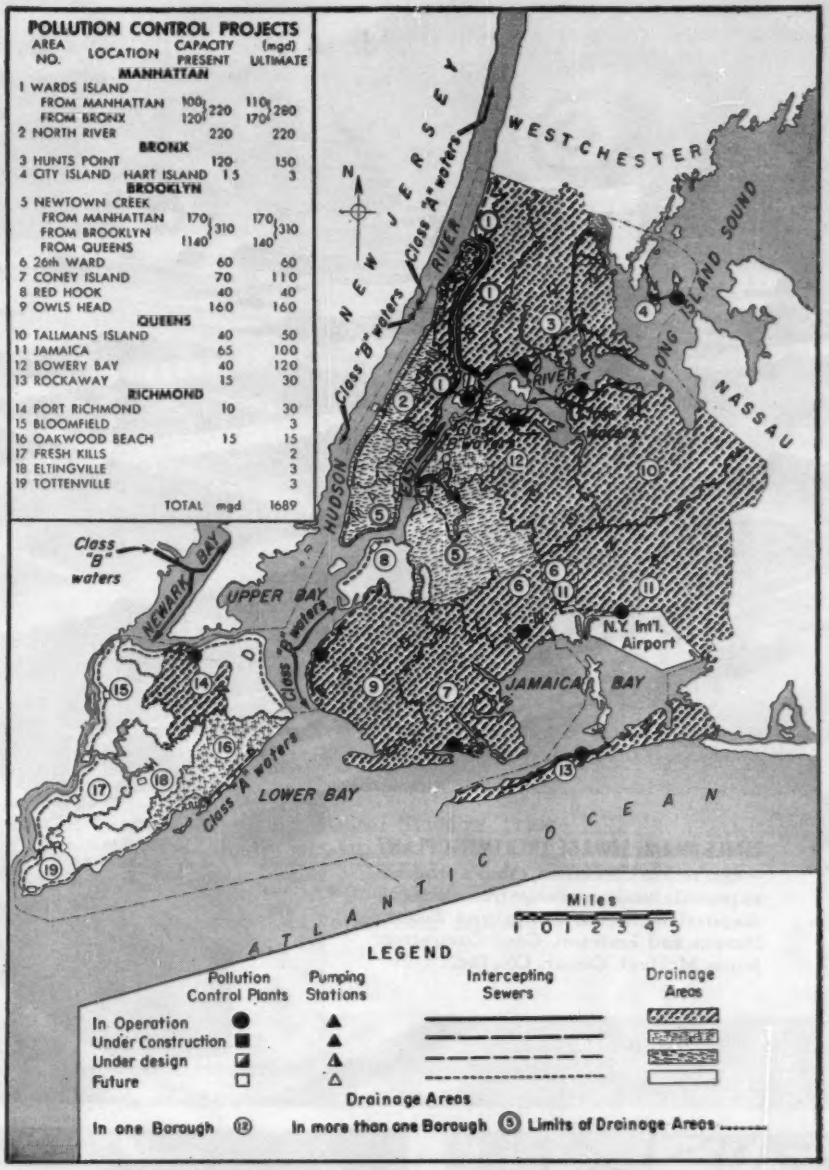
At the existing plant, raw excess sludge may be drawn from either the return sludge well or from the aeration tank effluent conduit. The new units provide for withdrawal of excess sludge from either the return sludge discharge header or from the final tanks directly.

The existing return sludge pumping station is equipped with two excess sludge pumping units capable of pumping between 1500 and 150 gpm. These pumps will be modified to discharge to the new concentration tanks.

The excess sludge from the existing station is pumped through a 16-in. line to the two 50-ft diameter circular thickening tanks.

An additional 16-in. line will be installed which together with the existing line will discharge excess sludge to both the existing thickening tanks and to the new concentration tanks. The maximum flow through both lines is expected to be about 12 mgd. To minimize the range of pumping head, three hydraulic balance pumps, each having a capacity of 1 to 5 mgd with one unit as a spare, will be installed. These pumps will draw suction from the final tank effluent conduit and discharge into the two 16-in. lines. In addition to facilitating the selection of the excess sludge centrifugal pumps, they will furnish a supply of fresh liquor to the concentration tanks and help maintain adequate detention periods and overflow rates to the tanks. Normally the flow to the concentration tanks will be maintained at a fixed rate of 12 mgd.

Provision is made for activated-aeration operation by piping connections so that excess activated sludge from the north and existing batteries, used as step units, can be returned as return sludge to the south battery.



NEW YORK'S PLAN FOR POLLUTION CONTROL includes Bowery Bay plant on waterfront at Steinway Street in Queens. A new interceptor being built in tunnel and open cut some 7¼ miles to the plant will pick up untreated sewage now going to Dutch Kills, Newtown Creek, and East River. The drainage area is No. 12 on the list above.

• **Existing final settling tanks**—Aerated liquor is distributed to the existing six final tanks from two channels with variable cross-section. Settled sludge is scraped to the effluent ends of the tanks to sumps and is lifted hydrostatically through riser pipes to sludge boxes and then to aerated return sludge channels. These channels discharge to a sludge well from which the sludge is pumped by return sludge pumps to the aeration tanks and by excess sludge pumps to the thickening tanks.

The tanks are 94 ft 5 in. long by 71 ft 5 in. wide by 12 ft 3 in. in water depth. They provide a displacement period of 2.3 hours for the average design flow of 40 mgd. On the basis of aeration tank effluent with a return sludge of 25% the displacement period is 1.79 hours. The settling rate based on sewage alone is 985 gal per square foot per day and on sewage plus 25% return sludge 1230 gal per sq ft per day.

Experience at other plants has shown that variations in chloride contents of the sewage due to leaky tide gates caused the flow to stream either along the top surface or along the floor of the final tanks. A long course of travel is desirable to settle out solids and to obtain the best quality effluent. The existing final tanks have been altered to provide this long travel by using baffles which permit a U-shaped flow pattern.

• **New final sedimentation settling tanks**—Two additional final tank bat-

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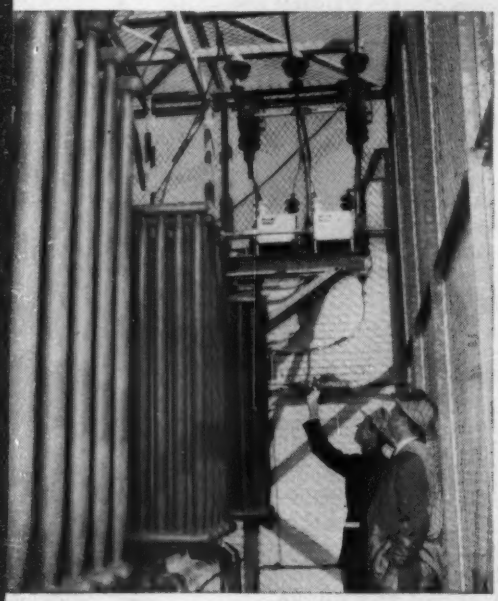
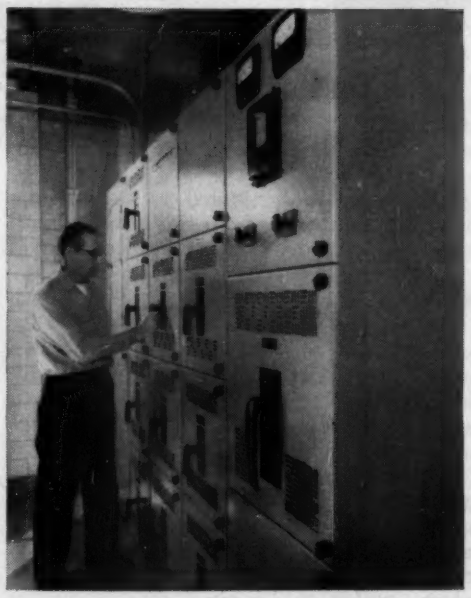
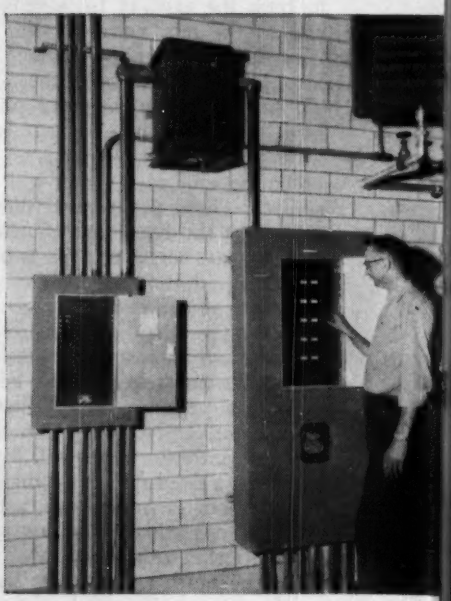


FACT: Reliable electrical service starts at this city-owned substation, adjacent to the plant. Three 333-kva, single-phase Westinghouse transformers step down utility power from 13.2 kv to 480 volts.



FACT: Service continuity on the entire electrical system stems from this Westinghouse switchboard, distributing at 480 volts. Air circuit breakers protect the main circuit and 10 branch feeders.



FACT: Westinghouse "De-ion®" circuit breaker panelboards at key distribution points protect plant's services. Westinghouse dry-type transformer, top, reduces voltage for lighting and instruments.

FACT:

Westinghouse distribution equipment serves Cincinnati's new sewage treatment plant

ELECTRICAL SYSTEM DESIGNED TO MATCH LITTLE MIAMI PLANT'S ULTIMATE CAPACITY OF 30,000,000 GALLONS A DAY

FACT: Dependable power in Cincinnati's Little Miami Sewage Treatment Plant is assured by a coordinated installation of three 333-kva transformers, a 480-volt switchboard, lighting and power panelboards, dry-type transformers and motor control . . . all matched for operating simplicity and plant efficiency.

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teries of four tanks each will be added, one battery on each side of the existing battery. The new tanks will be long straight-line units.

Aerated liquor will be distributed to each battery of the new final tanks from an aerated influent channel of rectangular cross-section. The discharge to each tank will be controlled by three 30x24-in. influent gates, one gate for each of the three tank bays.

Settled sludge in the new tanks will be scraped from each end of the tanks to cross-collecting channels located 120 ft from the inlet ends of the tanks. Final effluent will be withdrawn over transverse weirs located at the far ends of each tank.

The flow of sludge from the existing tanks is controlled by adjustable riser pipes from troughs in the sump bottoms. There are two riser pipes per channel or eight riser pipes per tank. In the additional final tanks sludge will be withdrawn by direct pump suction from sumps in the sludge cross-collecting channels in the tanks. One 18-in. diameter suction line per tank will be provided. The return and excess sludge pumps will be connected to these lines.

Scum that collects in the influent channels to the existing final tanks will be removed by telescoping bell-mouth pipes and conducted to the main plant drain. Scum that collects in the influent channels of the new final tanks will be flushed into the tanks and will flow over the weirs with the tank liquor.

• **Sludge thickening and concentration**—The two existing tanks for thickening waste activated sludge are 50 ft in diameter with side water depths of 10 ft. The tanks are equipped with "picket fence" thickening mechanisms.

These tanks were designed to settle either aeration tank effluent or sludge from the final sedimentation tanks. Sludge concentration practices with mixed primary and activated sludge have produced excellent results at the existing plant. Concentrations of 12% and better have been obtained for fairly long periods. The results in the summer, when step-aeration is used, are not as good. Summer results average only about 6% concentration. The new tanks have been designed on the basis of allowing for a maximum of 12% solids to a minimum of 6% solids.

Operating experience has shown that circular tanks of moderate diameter and shallow depth are best suited for concentrating mixed sludges. However, some difficulties have been experienced in moving the heavy sludge produced. The new tanks have been designed with these difficulties in mind.

Four additional circular "concentration" tanks are being built. (This terminology is used in preference to "thickening" to distinguish between the existing and new tanks and to give a more precise description of the new practice instituted at this plant.) Each will be equipped with a picket-fence thickener.

Mixed sludge will be discharged to each tank through 16-in. diameter feed pipes located below the liquid level in the tanks. These pipes will outlet in 12-ft diameter feed wells 8 ft deep which extend 7 ft below the surface of the liquid to produce a baffled down-flow pattern effective in sludge concentration. The four new concentration tanks will have a solids loading of 12.6 lb per sq ft of tank surface per day based on a mixed sludge. If the existing tanks are included the solids loading will be 10 lb per sq ft of tank surface per day. The overflow rate for the four new tanks will be maintained at 780 gal per sq ft of tank surface per day. If the existing tanks are included the overflow rate will be 620 gal per sq ft of tank surface per day and the detention period will be 2.8 hours and 3.1 hours respectively.

Normally the two existing circular thickening tanks will be considered as standby units. The design of the new units will permit concentration of either mixed excess activated and primary sludge or excess activated sludge only.

Excess activated sludge is delivered to the existing circular thickening tanks through a 16-in. pipe from the excess sludge pumps in the return sludge pumping station. The overflow from these tanks may flow to the plant by-pass sewer or to the high level wet well for delivery to the head of the plant.

The top of the new concentration tanks will be set at elevation +25 with a 2-ft freeboard to normal water surface. This will permit the overflow from these tanks to flow to the effluent conduits of the grit chambers, thus avoiding the necessity of pumping this large volume of liquor. An alternate connection to the outfall sewer will also be provided from the tank overflow which may be used when the condition of the overflow is satisfactory.

Six 200-gpm extra heavy duty positive pressure pumps, three for each two concentration tanks will be installed for pumping thickened sludge to the digestion tanks.

• **Sludge digestion**—The four existing sludge digestion tanks are 81 ft in diameter with a side water depth of 32 ft and have a capacity of 182,000 cu ft each. Controlled digestion operations at the Bowery Bay plant have produced excellent results with high solids loading and as a result of the experience gained the number and size of the additional digesters as originally planned was radically reduced. Four new digesters are being built. They have been designed as primary digesters and the existing tanks have been redesigned and may be used as either primary or secondary digesters or as storage tanks.

Total installed digester capacity including the existing tanks will be 1,516,000 cu ft.

The existing tanks are equipped with ten 3-in. diameter heating coils. These coils will be removed and the existing and new tanks will be heated by external sludge heaters to maintain a minimum sludge temperature of 95 F in the primary digesters.

The sludge heating facilities have been designed to provide for a 45 F temperature rise of the sludge with minimum outside temperature taken as zero for heat transmission calculations. Sludge quantities for heating purposes have been estimated at 300 gpm considering three of the four new primaries in use. This figure is based on a concentration of mixed sludge of about 6% solids. The sludge heating load is estimated at a total of 7,800,000 Btu. The rate of heat transfer has been taken as 10 Btu per sq ft per degree difference in temperature F.

Sludge digestion operations will be controlled from three operating centers: (1) new pumping station—located between the four new digestion tanks which will contain the plunger, transfer and recirculating pumps and the centrifugal sludge heating pumps; (2) new sludge heating station—located between the new and existing digestion tanks which will contain the external sludge heating units; (3) existing pumping station—located between the four existing digestion tanks.

Existing 130 gpm plunger pumps will be removed and will be used in the new preliminary sludge pumping stations. They will be replaced by 300 gpm heavy duty plunger pumps. These pumps will more adequately recirculate the tank contents when the existing tanks are used as primary digesters, and they will also be used to discharge digested sludge directly to sludge vessels when this operation is necessary. Sludge heating pumps will be added to make use of the existing tanks as primary digesters. The supernatant withdrawal piping, except

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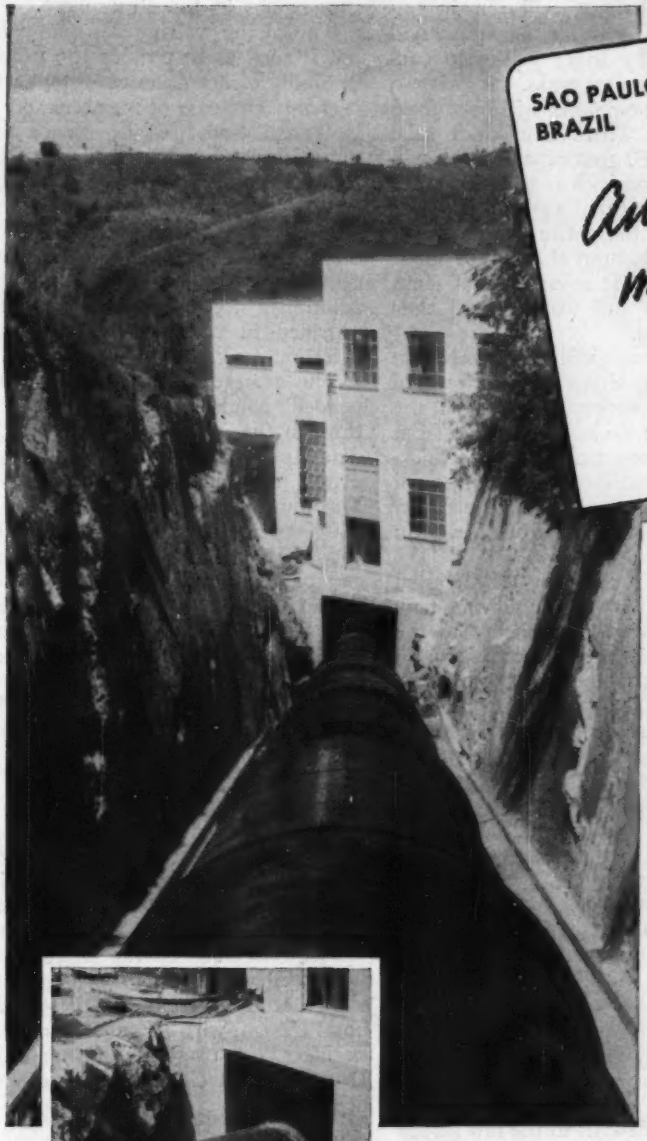

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for minor changes, will remain unaltered. Gas withdrawal piping will be replaced by larger piping to conform with the new tanks.

The four new tanks will have fixed steel covers. Three down-draft tube mixers of 7500 gpm capacity each will be mounted on each cover. The three mixers are expected to be capable of turning over the entire tank contents from top to bottom at a rate of about once an hour. It is hoped that scum accumulation and foaming will thus be minimized.

The new tanks will be designed for:

- Receiving of raw thickened mixed primary and excess sludge from the concentration tanks, raw sludge from the preliminary tanks, or raw thickened excess activated sludge through a single inlet connected at the center and 6 ft below the liquid level in each tank.
- Transfer by gravity of digested sludge from the bottom of the tank cones through overflow boxes to the existing tanks used as secondary digesters, gas extractors or storage tanks.
- Transfer by plunger pumps of digested sludge from the bottom of the tank cones to the existing tanks used as secondary digesters, gas extractor or storage tanks.
- Pumping of digested sludge to storage tanks or directly to sludge vessels by plunger pumps.
- Recirculation of tank contents by down-draft mixers.
- Recirculation of tank contents from the bottom of the tank cones to the raw sludge inlets by plunger pumps.
- Recirculation of the tank contents from the center of the tank at a level about 4 ft above the bottom of the tank sidewalls to the raw sludge inlets by centrifugal sludge heating pumps. A connection will be provided to permit recirculation from the edge of the tanks 17 ft above the bottom of the tank sidewalls.
- Heating of incoming raw sludge by recirculating tank liquor (see above) through external sludge heaters.
- Storage of gas produced in the holders of the four existing tanks.
- Transfer of sludge from any tank to any other tank by means of plunger pumps.

No decant provisions will be made in the new tanks.

Gas will be removed from all tanks, including the four tanks with gas holder covers, to a gas header. Three 600 cfm gas pressure booster pumps with after coolers will be interposed between the gas header and the gas discharge line to the gas engines. A gas meter of the orifice type will be installed in this line. A waste line will conduct all gas not used in the gas engines to the atmosphere.

The piping, valving and pump layout is such as to provide the utmost flexibility of operation consistent with economy and ease of maintenance. It is evident from past experience that unless sludge can be withdrawn from the tanks at points other than the centers much utilizable digestion volume is lost because of solids build-up on a sloping plane from the tank centers to the sidewalk. Accordingly, additional sludge take-offs are being provided in each existing and new digestion tank.

The average daily amount of suspended solids to be disposed of through the digestion process for the design population of 1,000,000 is estimated to be about 194,000 pounds. Maximum quantities are estimated as 150% of the average for tank design and 300% of the average for piping and pump design.

- **Cost and credits**—The indicated final cost of the project at this time is about $35,500,000 made up as follows:

Intercepting sewers $20,000,000
Sewage works expansion $14,000,000
Engineering, etc. $1,500,000

The construction of the project is being supervised by A. Glock, in charge of the Bureau of Sewage Disposal Construction with Leo Magid, as resident engineer on the plant. Henry Vermont and A. Schrier are resident engineers on the intercepting sewer system. S. W. Steffensen is in charge of the Bureau of Sewage Disposal Design, with J. Cunetta, project engineer on plant design, and F. Drexel, project engineer on intercepting sewers.

Six Air Force Installations Go Under Contract in Alaska

Contracts amounting to about $18 million have been awarded for construction of six military installations for the U. S. Air Force at remote sites in Alaska.

Successful bidders and the locations of their projects, all to be started this summer with completion set for December 1956, are:

Sam Bergesen, Tacoma, Wash., $3 million, at Unalakleet; S. S. Mullen, Inc., Seattle, $2.1 million at Chiniak; Manson-Osberg Construction Co., Seattle, $3.7 million at Kotzebue and $3 million at Fort Yukon; Morrison-Knudsen, $4 million at Bethel; and Chris Berg, Inc., Seattle, $1.8 million at Homer.

Bids were opened in Seattle April 28 and the contracts awarded within 48 hours in keeping with efforts to make the most of the present working season.

Add 18-ft Width to Highway Bridge

Extra width is being added to a California highway bridge to permit it to carry a four-lane divided highway. When the bridge was built some 20 years ago a 30-ft wide, three-lane pavement was provided. Now with conversion of this section of U. S. 99 to freeway standards an extra lane and dividing strip is needed.

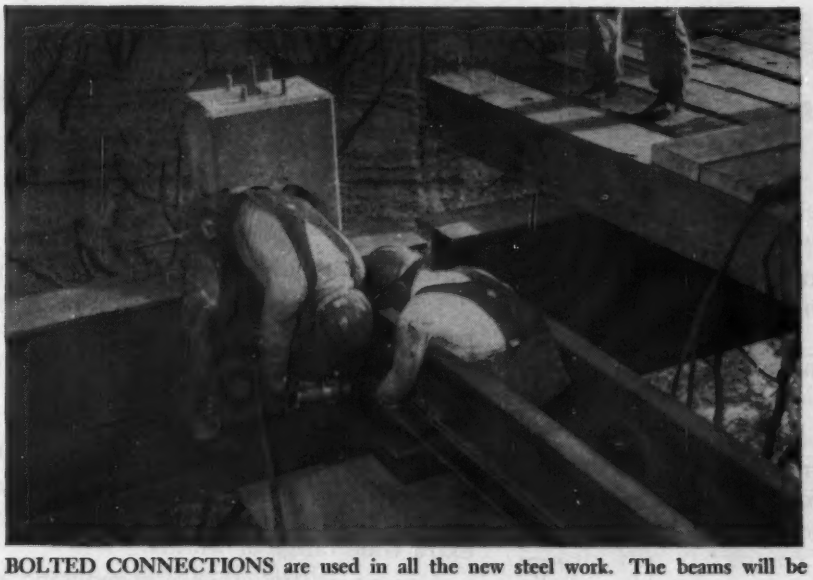
Two 24-ft roadways having two lanes each, a 4-ft dividing strip and two 6-ft sidewalks will result from adding an 18-ft width on one side of the structure. For the most part this is accomplished by constructing concrete bents on 44-ft centers consisting of three 16-in. dia columns and a 2½-ft wide by 4-ft deep bent cap. These are connected by 36-in. wide flange beams braced by 18-in. channels. All connections are made with 1-in. dia high-strength bolts.

Where the bridge crosses the Tuolumne River there are three 80-ft spans. New piers here have single columns. Those next to the 44-ft spans are 4x5 ft in plan and mount a 4x7-¾-ft cap. Piers in midstream have a 4½x5-ft column with 4½x7-¾-ft cap. And the 80-ft bays are spanned by 70x14-in. all-welded girders.

All construction work is being accomplished off the existing span to prevent traffic interference. For steel erection, heavy timber matting is laid on steel already in place. This permits a crawler crane to place steel on the 2049-ft long structure.

With reconstruction of many highways, California bridge engineers are planning alterations or additions to a large number of stream or grade crossings. In some cases a new bridge is built. In other instances a complete structure is erected. And where widening is indicated, several plans might be followed. For example, on the Tuolumne River bridge consideration was given to additions on both sides. But addition on one-side only proved cheaper. And approach conditions made the one-side widening favorable.

STEEL ERECTION CREWS work from new construction to minimize traffic interference as a three-lane California bridge is given a four-lane divided roadway.

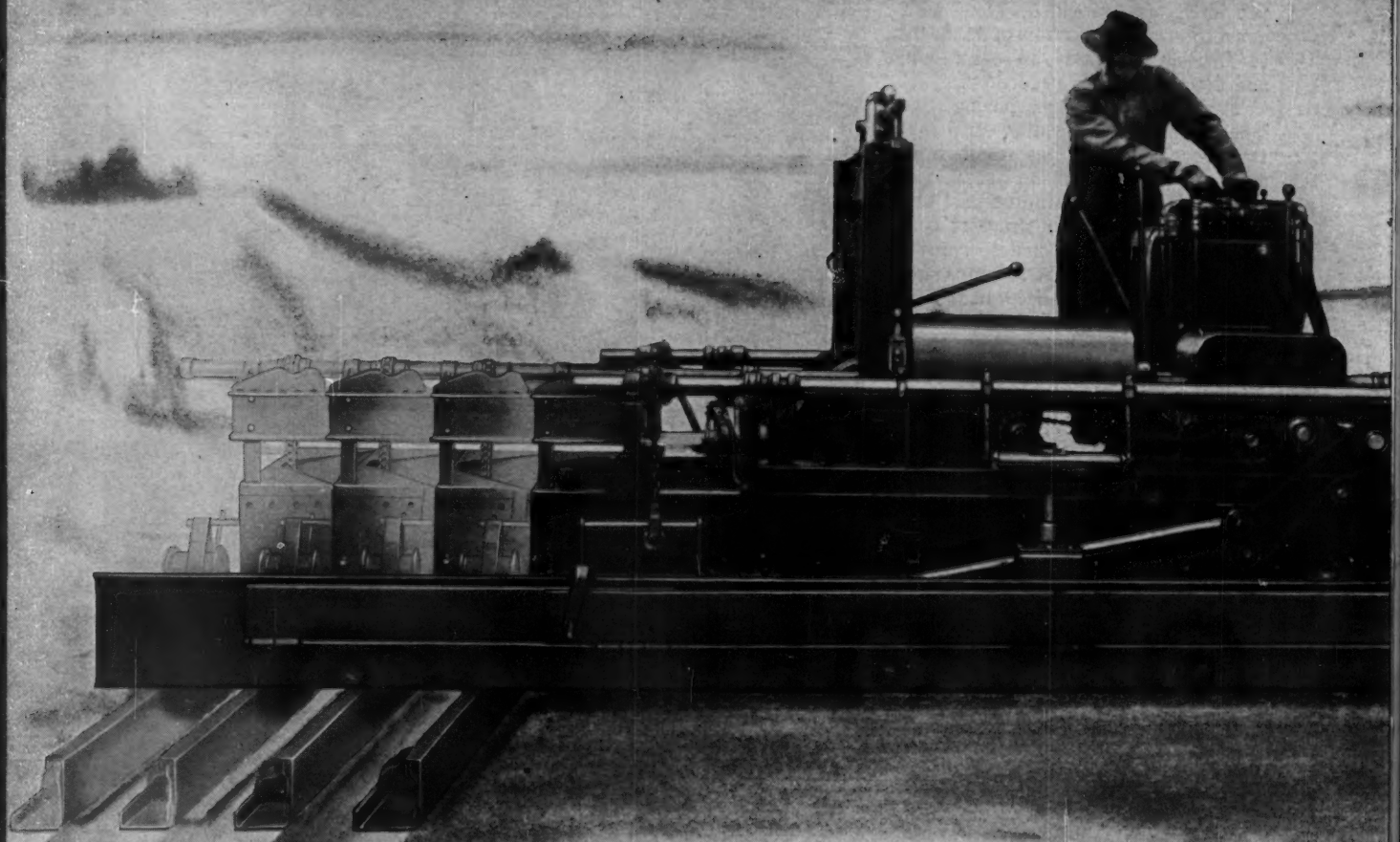


BOLTED CONNECTIONS are used in all the new steel work. The beams will be topped with a 7-in. thick concrete pavement.

The work is a project of the California Division of Highways, G. T. McCoy, state highway engineer, and F. W. Panhorst, assistant state highway engineer in charge of the bridge department.

Granite Construction Co. of Watsonville, Calif., hold a $635,014 contract for the bridge widening and for new approaches. The Tuolumne River bridge widening cost is about $334,000. Steel erection is by Bethlehem Pacific Coast Steel Corp.

It's FLEX-PLANE



. . . This time a SELF WIDENING FINISHING MACHINE— that eliminates a Road Builder's Headache

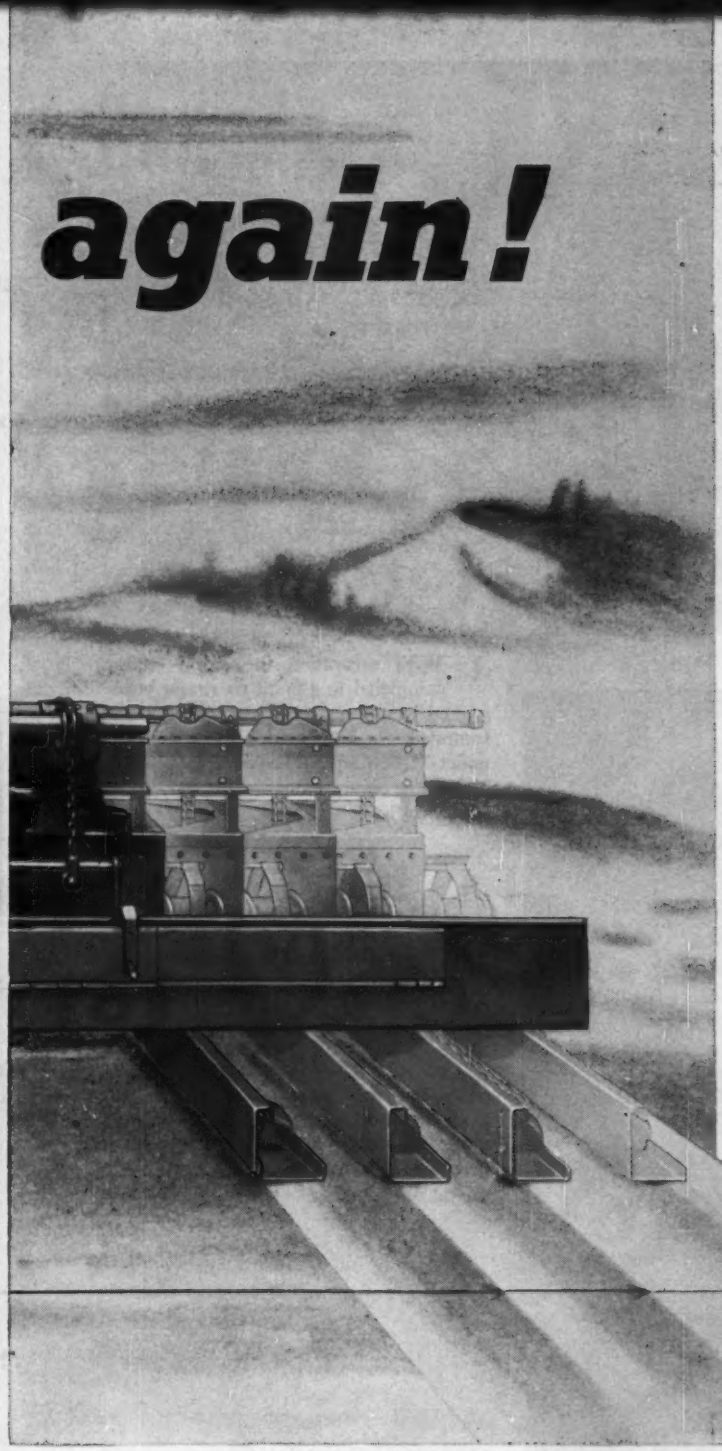
Now, for the first time, a mechanical finishing machine will widen with a flick of a finger. What does this mean to road builders? Hundreds of hours saved in finishing interchanges, intersections, passing areas, pull-off areas or wherever the width of a highway varies.

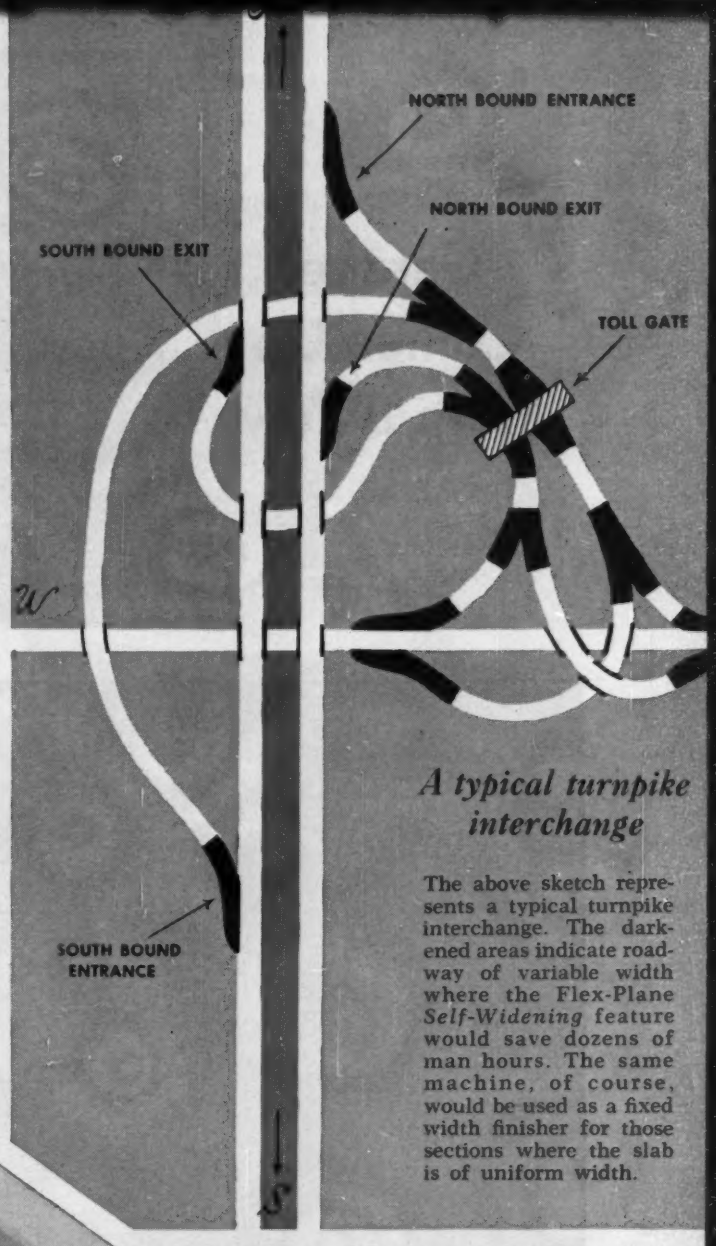
Simply set your forms to follow the actual path of the finished roadway, pour your concrete and the Flex-Plane Self-Widening Finisher will do the rest. It's a completely new idea — *the frame widens — not the wheels.* A specially designed triple-lap frame gives the machine utmost rigidity even when completely expanded.

It's a real work horse that gives the finished roadway greater uniformity, reduces hand labor to an absolute minimum, permits the finish of wide and variable width areas without special form set-up and pouring operations. It's the greatest innovation in concrete finishing in recent years. Naturally, it can be used as a standard straight-line finisher, and with an extra wide range of widths.

Like so many other cost-reducing developments, the self-widening feature is found only

again!





A typical turnpike interchange

The above sketch represents a typical turnpike interchange. The darkened areas indicate roadway of variable width where the Flex-Plane *Self-Widening* feature would save dozens of man hours. The same machine, of course, would be used as a fixed width finisher for those sections where the slab is of uniform width.

on Flex-Plane Finishing Equipment. In fact, it's this kind of forward thinking that has made Flex-Plane the world's largest producer of concrete finishing machines. And it's the reason why you should talk with Flex-Plane before buying finishing equipment of any kind.

THE FLEXIBLE ROAD JOINT MACHINE COMPANY
WARREN, OHIO

FINISHING EQUIPMENT

The Flexible Road Joint Machine Co.
3900 Thomas Rd. Warren, Ohio

Please send me latest information on the Flex-Plane Concr Finishing Machine Line.

Name_____

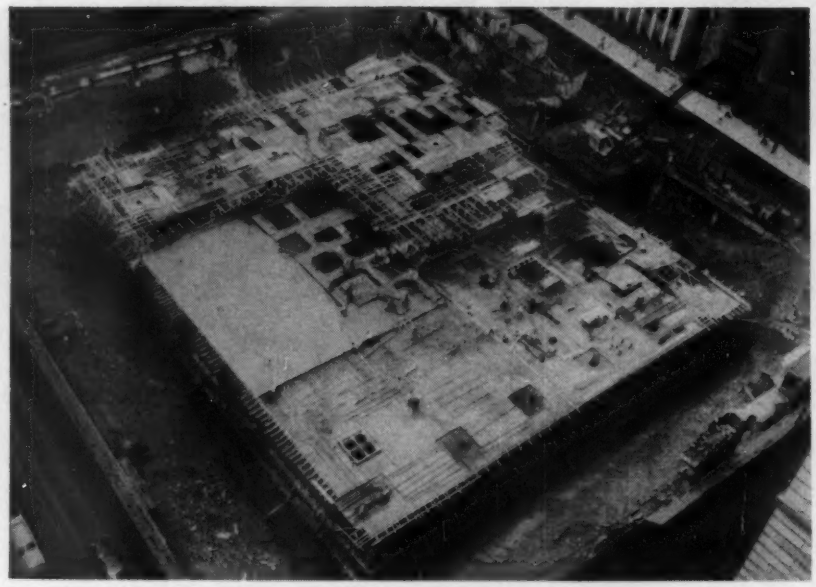
Title_____ Company_____

Address_____

City_____ State_____

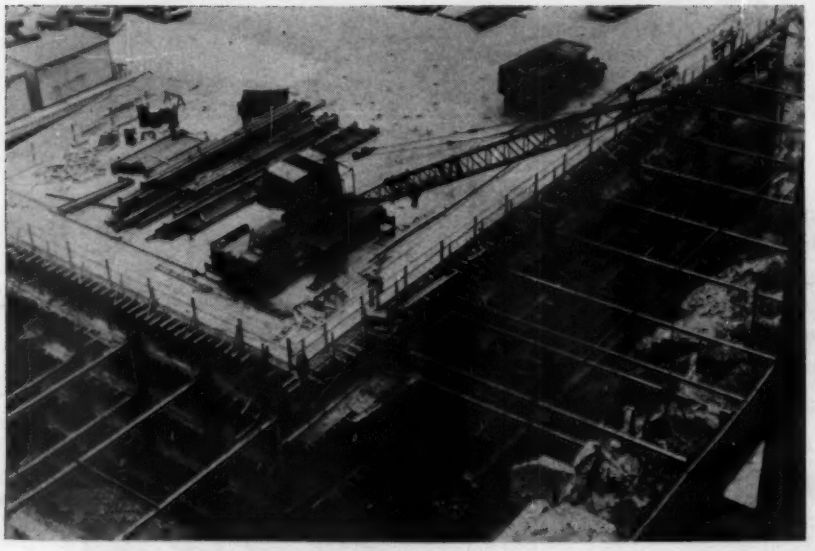
Heltzel — Flex-Plane

Garage Comes Up From Below

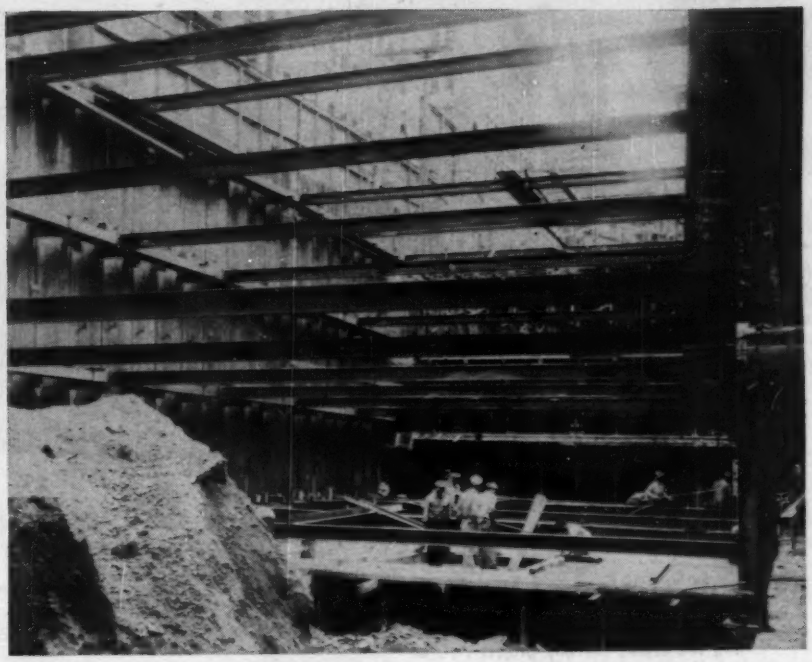


1 With excavation in central section completed to a point six stories below ground elevation on the high (south) side, formwork for Pittsburgh's 897-car garage under Mellon Square begins to take shape. Tarpaulins cover sand-gravel-silt soil, which erodes badly.

2 Central core of garage structure goes up in reinforced concrete, to 16 ft ceiling heights. Stores will occupy first two levels at lower street side (bottom of picture), and entrances for cars will be on street level on that side, giving on first and second sub-floors.

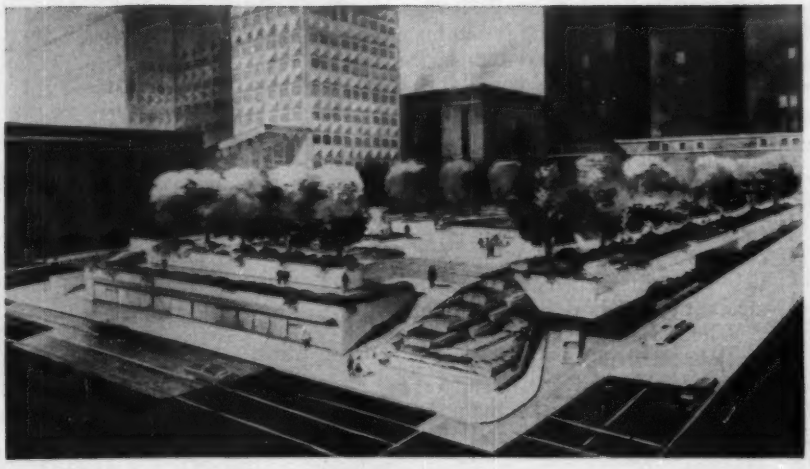


3 With central section of garage structure completed, bracing is installed, spaced horizontally at 13 ft 6 in., and vertically at floor level plus 18 in., kicking against a continuous vertical member. Excavation up to curb line can proceed in blocks, with bracing installed as excavation goes downward again. Roof slab contains 20% extra steel to take construction stresses.



4 With bracing installed and old foundations and other obstructions removed, concreting starts on outer edges of structure. Floors are designed for 75-lb live load, 100 lb dead load, with broomed surface for skid-resistance. Restricted space necessitated double and sometimes triple handling of materials, forms used for center core section were re-used for sides.

5 Nearly complete, city workmen (city will own and maintain park atop garage) install earth in 4-ft deep boxes that will hold trees and flower beds, complete waterproofing of central areas for fountains and pools. Entrances for cars are at lower and upper right of photo.



6 Finished job will look like this (though garage is already in use). Mechanical facilities include two manlifts, an escalator, passenger elevator; ventilation equipment to give eight complete air changes per hour. Builder is the H. K. Ferguson Company.

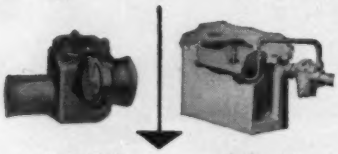
2 ways to select

DRAINAGE PRODUCTS

for any type of project

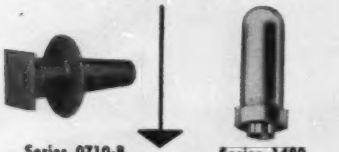
Series 3610 Floor Drain — Series 4550 Roof Drain

● Engineers who have the job of selecting the drains for any project . . . or who are engaged in writing plumbing drainage specifications for any building can approach this work in one of two ways.



Series 1170-T Backwater Valve — Series JH Grease Interceptor

❶ The hard way is to spend the necessary time and effort in locating the right type of information . . . analyzing pages of data . . . making comparisons—before a selection is made.



Series 0710-B Pool Fitting — Series 1480 Shock Absorber

❷ The easy way is to call on Josam, knowing that Josam has the widest range of plumbing drainage products in the world . . . and can give you the answers you want in a moment. Since there are so many important jobs to do—why take valuable time selecting drains. Call Josam on every job. Send coupon below—and get acquainted with the Josam line. No obligations.

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City_____ Zone____ State_____

ONLY A SINGLE LINE of shoring at mid-span is required for support during pours.

Steel Panels Control Light and Sound

Newly-developed steel panels combine the functions of pan forms, acoustic treatment and fluorescent lighting troffers.

The panels are 24 in. wide and are designed for long-span applications. The acoustical panel is perforated and lined with a non-combustible element to provide a relatively high degree of sound deadening. The troffer panel provides a housing for low-cost fluorescent fixtures and plastic diffusers to provide recessed lighting with a flush ceiling.

As forms for concrete, the TAC (derived from troffer-acoustic) panels need supporting only at mid-span and ends. With this system much of the materials and labor usually necessary for forming and shoring is eliminated. The panels carry no building loads after the concrete has cured and fire ratings are based on the reinforced concrete structural system.

The depth and coverage of the TAC panels are comparable to rib-slab or metal pan constructions; therefore architects, designers and contractors should have no difficulties with their behavior, structural capabilities and design procedures.

When the panels are received at the job, all that's required is to spot and place them on pre-set supporting shelves attached to the main beam forms. Conduit boxes and fibrous acoustical elements are attached to the panels prior to hoisting. Welding, placement of the main conduit lines and necessary drilling is accomplished from the top of the installed panels.

Main reinforcing steel is placed in the main beams and connected to the extended column steel. More bars are laid in the panel voids, forming T-beam sections, and all reinforcing steel is tied and interlocked. Electrification of the troffer panels is ac-

LOW COST lighting fixtures installed in troffers with acoustic panels between.

PANELS BECOME FORMS for concrete after reinforcing steel and wiring is installed.

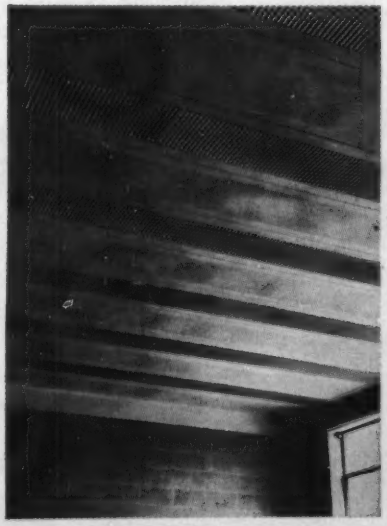
. . . And Act as Forms During Construction

complished by conduit feeders running perpendicular to the span of the panels and individual feeder lines down through the panel unit.

Transverse suspension bars are welded to the panels. It is around these that concrete flows to suspend the panels from the slab. Before the concrete is poured, a single line of shoring is placed at mid-span to prevent deflection under the dead load of the concrete. The same shoring that supports the main beams supports the panel ends.

After the formwork and shoring has been removed and the building walls are closed, paint may be applied to the formed ceiling; reflective paint can be used in the troffers for desired lighting effects. When the light fixtures are connected washable plastic is rolled into place to complete the installation.

Any combination of the panels may be used, depending on the desired lighting level. Where protection for the lights is needed, such as in recreation rooms or gymnasiums of schools, the plastic diffusing material in the troffer panel can be replaced with wire mesh. DETROIT STEEL PRODUCTS, 2250 E. GRAND BLVD., DETROIT 11, MICH.



PLASTIC DIFFUSERS are installed over lighting fixtures to provide flush ceiling.

Woolridge and M-R-S Make Special Tractor-Scraper Line

The Woolridge Mfg. Div., Continental Copper & Steel Ind., Inc., Sunnyvale, Calif., and the M-R-S Mfg. Co., Flora, Miss., have announced availability of a special line of four-wheeled, cable-operated scrapers designed for use with M-R-S tractors.

With heaped capacities ranging from 10.5 to 32.5 cu yd, the five new models are designated as Woolridge M-R-S OS-80, OS-90, OS-152, OS-200, and OS-260. The units incorporate special "traction masts" for use with the M-R-S hydraulic weight transfer system, which shifts scraper weight forward to the tractor drive wheels when extra traction is needed. M-R-S 4-wheel tractors are available in 180 to 335 hp models.

Among the features claimed for the scraper line are open bowl design, stabilized balance with extra low center of gravity, boiling bowl loading, large low pressure tires for greater flotation, simple cable reeving, and full-power-forward positive pivot-tilt ejection.

Rotary Trowel Converts to 26, 36 or 45-in. Capacity

A troweling machine that converts to 26, 36 or 45-in. capacity is powered by either a pneumatic or electric motor, or a 2 or 4-cycle gasoline engine. Any of the power heads will also power a floating disc and grinding-grouting head, and each comes in the three interchangeable ring sizes.

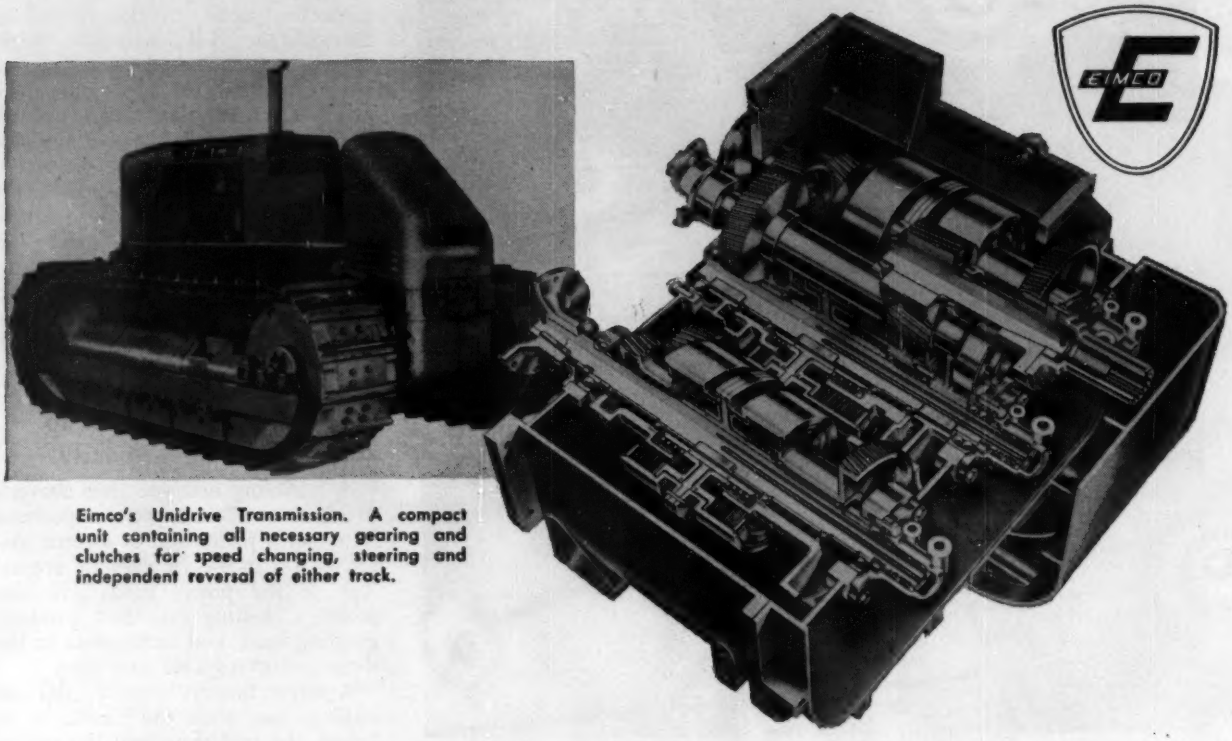
A safety throttle control rules out stalling, for, when the handle is released, the ring stops and the engine idles. Further, a lifting eye facilitates lifting or lowering the machine from one floor to another, without resorting to make-shift devices.

A new clamp ring is said to expedite switching to any of the four power heads, or to a replacement engine. Also, both edges of the reversible shoes and blades can be used to give double wear, and all three baldes adjust with a kick of the foot.

The trowel has a lower center of gravity for easy operation, and an auxiliary two-man carrying handle permits a simple moving when the use of a crane is impractical. A canvas bag is provided to protect the rewind starter and other parts from dirt when not in use. MALL TOOL CO., 7725 S. CHICAGO AVE., CHICAGO 19, ILL.

(*New Products continued on page 69*)

(Advertisement)



Eimco's Unidrive Transmission. A compact unit containing all necessary gearing and clutches for speed changing, steering and independent reversal of either track.

The Eimco Transmission Revolutionizes Tractor Design!

"I've run 'em all—and look, boys, with this Eimco tractor I can move more dirt with half the work."

So says a user who has had years of experience in running practically every known make of conventional tractor.

For the first time, the operator can see where he is going and what he is doing. **Now, controls are so simple** and easy that the operator can accurately maneuver this big machine with one hand. The Eimco Tractor responds instantly, without operator effort, for maximum safety.

Here, at last, is a tractor that has independent reversal of each track for spin turns — made possible by a revolutionary new transmission that allows speed changes or reversal in motion, gears that cannot clash, clutches that never need adjustment.

Two views are shown of the types of transmissions now in use in conventional tractors. These two views are typical of all transmissions in previous crawler tractors in use today.

Here are the facts set down in a comparative tabulation, feature by feature, and here is why the Eimco is better for you—

The Eimco tractor wtih bulldozer.

The Eimco tractor with loader.

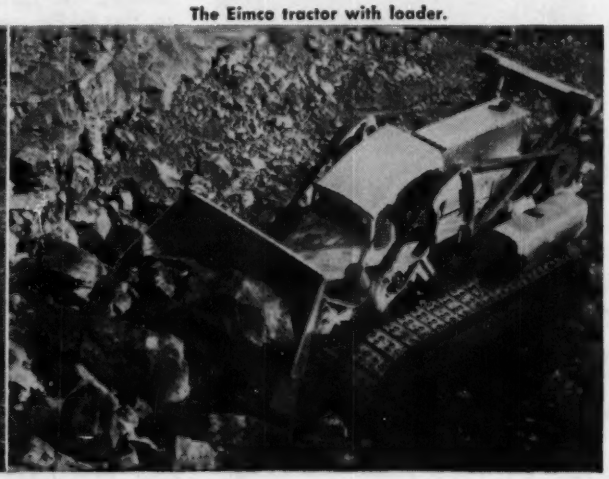
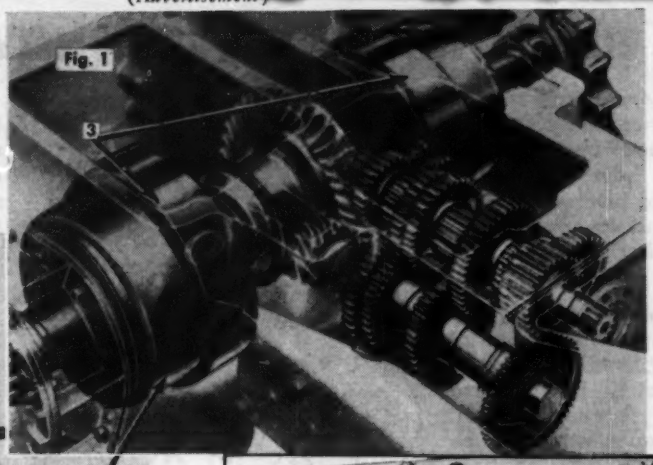
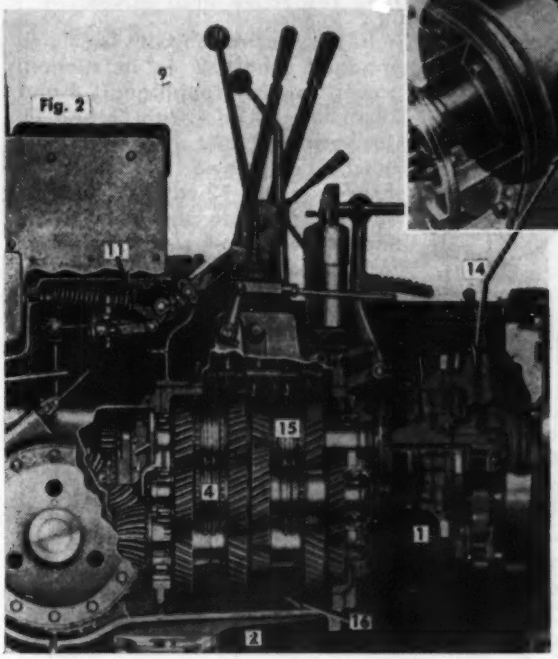
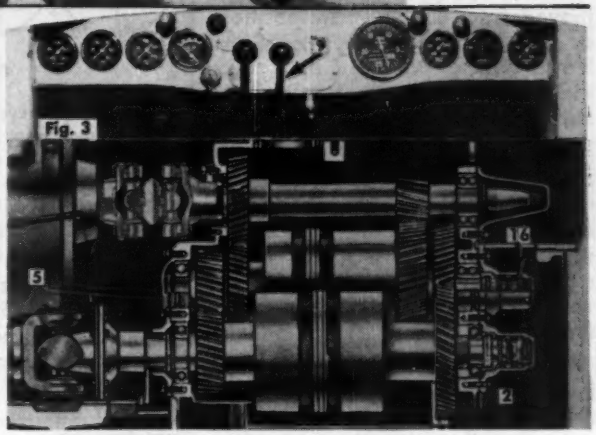


Fig. 1 shows conventional transmission with steering clutch drums and brakes in final drive assembly. Fig. 2 shows side elevation of conventional transmission with operating handles, master clutch and transmission speed changing gears. Fig. 3 shows Eimco transmission with instrument panel showing simple easy handle arrangement.







CONVENTIONAL TRANSMISSION	EIMCO TRANSMISSION
1. Master clutch, some wet, some dry.	1. None (No master clutch troubles).
2. Gear box.	2. Complete transmission in one case.
3. Steering clutches and brakes in final drive assembly.	3. No clutches, brakes, shifters or levers in final drive assemblies.
4. Various speeds forward and reverse—a total of 7 or 8 different sets of speed gears.	4. Two speeds forward and two reverse—the torq0e converter does the rest.
5. Direct drive transmission requires operator to select proper gear before starting.	5. Engine torque converter drive adjusts speeds at any gear selection from zero to full speed, according to the load.
6. Stop to shift, stop to reverse.	6. Shift in motion — under load, forward or reverse.
7. Gearing reverses when gears shifted to reverse.	7. Gearing always travels in same direction, with tractor going forward or reverse.
8. Skillful shifting necessary to change gearing without clashing.	8. Shift anytime, anyway — impossible to clash gears because they are always in mesh.
9. Numerous handles necessary to operate tractor.	9. Two small handles control all movements of tractor.
10. Shifting mechanical, unskilled operator can burn up clutches.	10. All shifting hydraulic, operator cannot damage clutches.
11. Shifting assisted by springs, plungers, pistons, gadgets.	11. Not necessary to have assistance on fingertip controls.
12. Must slip clutches to start tractor or hold on a slope.	12. Starting and holding tractor controlled by throttle and torque converter.
13. Must use brakes to effect turns.	13. Not necessary to use brakes for any maneuver.
14. Frequent clutch adjustments necessary.	14. No clutch adjustments necessary — or possible — ever.
15. Transmission overhaul is major operation.	15. Transmission easily removed for overhaul without disturbing any other assembly.
16. Splash lubrication.	16. Pressure lubrication.
17. All clutch plates dry — except master clutch on some available wet.	17. All clutch plates wet.
18. Toothed gear-type clutches in transmission.	18. Wet clutch plates throughout transmission.

THE EIMCO TRANSMISSION—HOW IT WORKS

The Eimco Unidrive Transmission is actuated by two small steering levers and a speed range selector. The handles all have three positions—the steering levers have Forward, Neutral and Reverse and the speed selector has Low, Neutral and High.

Any lever may be moved to any position from any other position at any time; i.e., both tracks may be thrown immediately into reverse while traveling forward at full speed or the speed selector may be moved from High to Low position, or Low to High. All parts of the Eimco Tractor are built to take these unusual maneuvers without strain or damage.

Sudden moves or direction changes are necessary for operator safety and operating advantages on the job. For instance, picking up speed on a load that has to be started in low gear—or instant reversal on a bulldozer that works too close to a face in grading.

The manipulation of these short levers transmits motion directly to a hydraulic valve and from that point on, all work is done by a low pressure (150 psi) hydraulic system.

The rifle drilled **ports in each shaft includes individual pressure lines to each of the two pistons** on each shaft and a separate line for pressure lubrication to pistons, clutch plates and bearings. The lubrication line is a separate low pressure system of approximately 20 psi which has been cooled and filtered from a portion of the oil supplied from the reservoir through the main supply pump.

Fig. 4

Illustrations A through D show shafts in the above arrangement with the power input shaft eliminated.

Illustration A shows all handles in Neutral. The engine drives input shaft #1 (which is omitted from this sketch because of its position and the fact that it runs constantly while the engine is running), and motion is transmitted to gears 10 and 11 which run free on shaft 2 Note: None of the shafts shown are turning.

Illustration B shows the two steering handles in forward position and the speed selection lever in low.

When either speed position is selected all gearing in the transmission is in motion. When locomotion clutches are engaged the output shafts turn, transmitting power to their respective final drives.

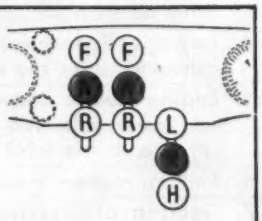
In this illustration with LO clutch engaged, shaft 2 is in motion, power flow is through gears 8 and 13 at low speed. With FL and FR (forward left and forward right) clutches engaged the drive is through gears 12 to the left track and 5 and 9 to the right track. Shafts turn as shown to produce forward motion.

Illustration C shows both steering handles in reverse and the speed selection handle in high. Power flow is now through 8, 6 and 7 to the left output shaft and 13 and 14 to the right shaft turning both shafts as shown to produce reverse motion.

Illustration D shows the left steering handle in forward and the right steering handle in reverse with the speed selector in low position to produce a spin turn to the right. Power flow is through gear 13 to 12 and 14 which turns the shafts in the same direction for spin turns. Spin turns can be made in either speed position.

ILLUSTRATION A

When handles are in this position and the engine is running, gears 10 and 11 are in motion.



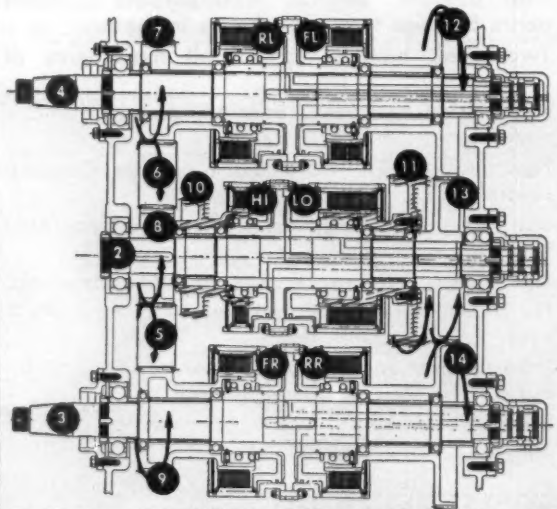
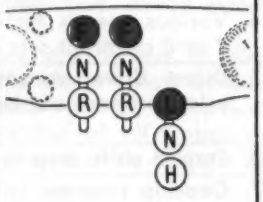
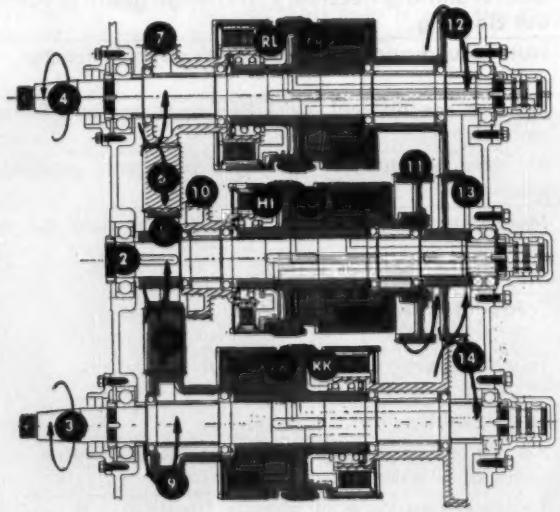


ILLUSTRATION B

When handles are in this position, power flow is through 11, LO, 2, 13, 12, FL, 4 to Left final drive and 11, LO, 2, 8, 5, 9, FR, 3 to Right final drive. The Tractor is in forward motion in low gear.

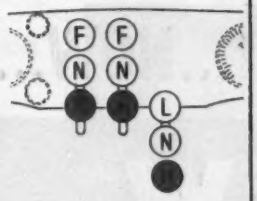




The Eimco transmission is fully covered by patents and patents pending

ILLUSTRATION C

When handles are in this position, power flow is through 10, HI, 2, 8, 6, 7, RL, 4 to the left final drive and 10, HI, 2, 13, 14, RR, 3 to the right final drive. The Tractor is in reverse motion in high gear.



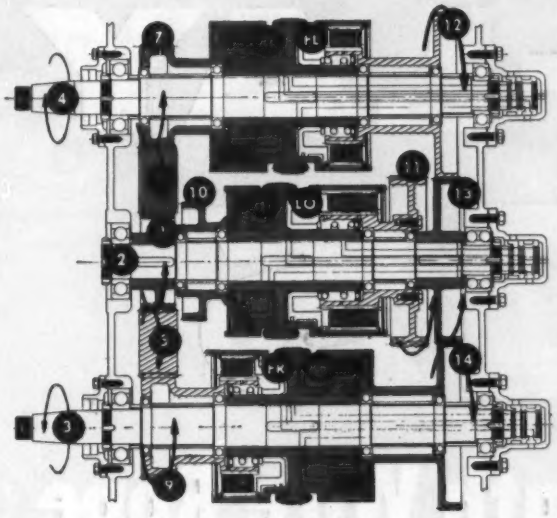
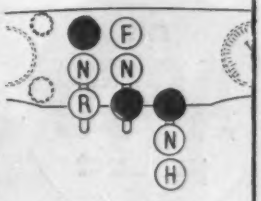
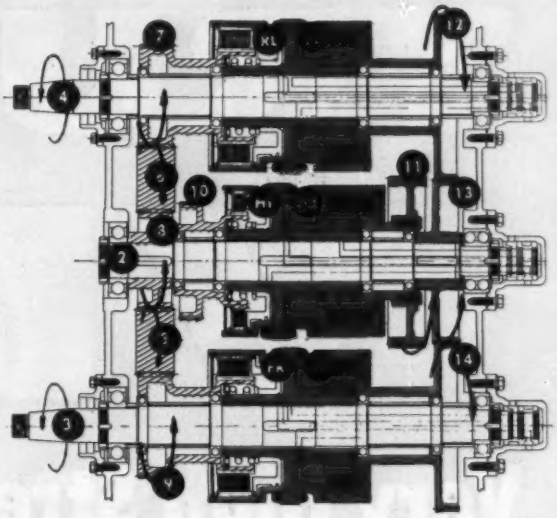


ILLUSTRATION D

When handles are in this position, power flow is through 11, LO, 2, 13, 12, FL, 4 to the left final drive and 11, LO, 2, 13, 14, RR, 3 to the right final drive. The Tractor does a spin turn to the right in low gear.





Note that the gears maintain their direction of rotation in all possible combinations of handle positions. This is an important advantage in the long life of the Eimco Transmission. **No other tractor transmission makes all speed changes, reverses and turns the tractor without changing direction of rotation of the gears in the transmission.**

Changing shaft direction without changing gear direction is accomplished by actuating clutches that drive to opposite ends of the output shafts. Since the gearing on one end of the shaft turns clockwise and on the other end counterclockwise, the gearing maintains its original direction of rotation and the shafts change direction for reversal.

This remarkable transmission never needs to be opened for adjustment of any clutch—all wear is compensated in the hydraulic pistons. The entire shaft and gear assembly is bathed in cooled oil with the added precaution of circulated lubricating oil under pressure to all parts.

HERE'S THE PROOF

Eimco Tractors are the finest tractors modern engineering can produce. The Eimco Transmission is only one part of this remarkable tractor built to do the rough, tough jobs with ease — built to stand up under the pace of heavy contracting in rock or other difficult material—month after month, without down time for repairs.

A contractor handling the removal of slag from the open hearth furnace slag pockets of one of the country's newest and largest steel plants, after trying to use a number of conventional tractor loaders which could not take the gaff, tried an Eimco 105. Here is the job—enter the slag pockets of an open hearth furnace when it goes down for repair, even while the slag is still hot, break up the slag, load it and convey it to railroad gondola cars, the kind of work that only an Eimco is built to take. The bucket lip is forced into or under the slag, the entire machine practically stands on its front idlers while the operator raises and drops the rear end of the machine to give it a crowbar action; molten slag chunks weighing as much as six or seven tons are easily picked up and loaded. Day in and day out the Eimco 105 was called on to handle the toughest slag removal jobs in the plant — conventional tractors had fallen apart in a few days, but the Eimco earned for itself a phone call from the contractor, **"We're going to use your machine on every steel mill job we've got—enter our order for four more Eimco 105's."**

B-113

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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You asked for it...NOW...here it is!

NEW TRU-LAY VHS

Very High Strength Wire Rope

Sets New Service Records in SCRAPER ROPES, SHOVEL HOIST ROPES, DRAG LINES

TRU-LAY VHS is 15% stronger than Improved Plow Steel which, up to now, has been the best procurable.

It adds extra strength, toughness and wear-resistance to the outstanding advantages of Preformed construction. Because it lasts longer and reduces "down time" for wire rope replacement, TRU-LAY VHS costs less to use. This has been proved in carefully kept records of gruelling field tests on scraper ropes, shovel hoist ropes and drag lines.

Handle Heavier Loads

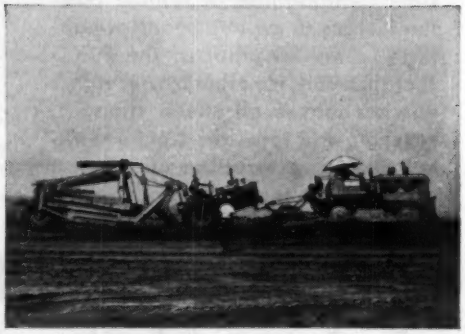
With stronger TRU-LAY VHS you can handle heavier loads with the same size rope. In some applications you may be able to use a smaller line to handle the same load.

Because It's Made of Tougher Wire You Get Longer Service

New TRU-LAY VHS is made of tougher and more wear-resistant wire. This results in longer wear under the abrasive conditions encountered by shovel hoist ropes and the abuse that drag lines and scraper ropes necessarily get.

Reduces "Down Time" —Costs Less to Use

Toughness and wear-resistance means longer life and longer life pays off in lower rope costs—it also reduces "down time" for wire rope replacement.



Ask your American Cable Distributor Salesman or write to the nearest American Chain & Cable Company office listed at right for Brochure DH-489

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VHS 15% STRONGER

Home Fire Alarm System Available for Only $55

Heat sensitive buttons hooked up to a central panel make up a new fire alarm system available for private homes. The system lists for $55.

The fire-spotting elements in the new system relay danger signals back to a small box-like master alarm panel which rings a bell and flashes a light to direct the homeowner to the trouble area. The panel is generally mounted on a bedroom wall, central hallway or any other location where it can be seen and heard at all times.

The sensing elements are button-like affairs installed near or on the ceiling. According to the manufacturer, they can detect an abnormal temperature over an area of 200 sq ft, and are linked to the alarm panel by wire. For larger areas, extra sensing elements are used in the system. The buttons are said to be sensitive enough to pick up the heat from a smoldering fire caused by a frayed electric cord, a carelessly-tossed cigarette, spontaneous combustion in the basement from oily rags, dust "explosions" in the attic, or even unnoticed sparks on roof.

The system is designed for three "zone" circuits, each of which can be connected to as many as ten detecting elements. Typical zone arrangements might include basement and garage, first floor and second floor and attic. Normally, the elements activate the alarm circuit and turn on the warning light at 140 deg. F. High temperature types—175 deg—are available for installation in furnace rooms, attics and other areas where higher temperatures are normally maintained. Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

Goodrich to Produce Off-Road Tubeless Tires

A complete line of wide base, low-pressure tubeless off-the-road tires will soon be marketed by B. F. Goodrich.

It is reported that tires of this type have seen service in every section of the country and in foreign countries for the past two years and have delivered excellent service. Forerunner of the line was an all-nylon 65-in. off-the-road tubeless tire. This tire, designed for high flotation, features a modified traction tread and has found use on varied types of off-the-road equipment, including tractors, bulldozers, scrapers, and other earth-moving equipment. The B. F. Goodrich Co., Akron, Ohio.

Wheaton, Maryland
Shopping Center

Architect: John Hans Graham and Assoc., Washington, D. C. General Contractor: George C. Martin Co.

9-value Tectum® roofs in million dollar value center

A noncombustible two-inch Tectum roof deck, the exposed underside painted to specifications, shelters shoppers as they purchase high value at low cost in this million dollar co-op shopping center.

Customers will enjoy year round shopping comfort at less cost because of Tectum's high insulating properties. At least 70% of all harsh noises will be absorbed.

For years ahead, the rest of Tectum's nine values will contribute to safety, strength, and minimum upkeep. With an ultimate live load of 200 lbs. p.s.f., and greater stability than most building materials, Tectum weighs approximately 2 lbs. per board foot, is easily workable with hand tools, has a self-decorative texture, and is termite and fungus proof.

See It Now! Ask for 1955 Technical Data, or refer to Section 2e/Te, Sweet's Architectural File.

Tectum® Div.
The Alliance Manufacturing Company
NEWARK, OHIO

TECTUM DIV.
130 South Sixth Street, Newark, Ohio

_____ Please send Technical Data

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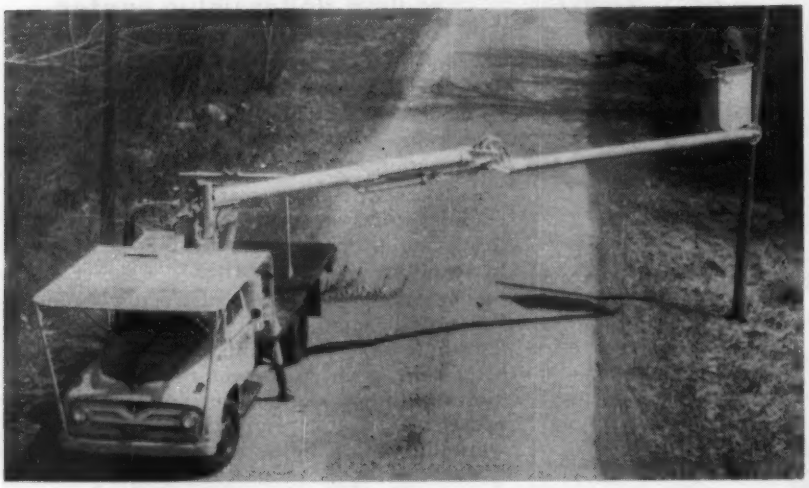
Address _____

City _____ Zone ___ State _____

One-Man Crane Has 15-Ton Capacity

A self-propelled, one-man operated, rubber-tired utility crane has a 15-ton lifting capacity. Designated the UC-68, it can be equipped with crane, clamshell, dragline, lifting magnet, shovel or hoe attachments and travels from job to job at speeds up to 7 mph. The UC-68 is equipped with a hydraulic control system and has an independent rapid boom hoist which provides power controlled raising or lowering of the boom. Optional features include reversing clutches for either or both main drums, and independent swing and travel. Upper machinery rides on eight conical hook rollers said to minimize wear and eliminate center pin uppull. The carrier has hydraulic stabilizers operated from the machine's cab. Detachable, full-width outriggers, located at both ends of the machine, are optional equipment. A retractable high gantry is also available. The UC-68 is powered by gasoline engine with a torque converter. Link-Belt Speeder Corp., Cedar Rapids, Ia.



Mobile Tower Features Low Price Tag

Design changes in the new Tree King are said to provide a higher degree of maneuverability, greater height and longer reach than earlier models. The lower boom, moving through an overhead arc of 135 deg—45 deg past vertical—results in a reduction of operating time. Mounted on a conventional truck chassis, the unit enables a crewman at the controls to place himself at a working height of 45 ft from the ground. Horizontal working reach from the turret is 32 ft with a working load of 300 lb. Self-contained auxiliary controls at the base of the unit and glass-fiber and plastic crow's nest with no exposed metal parts are supplied as standard equipment. Chip-resistant insulation insulates the upper boom. A completely equipped working "package" is available. It consists of a Tree King, truck, platform body with tool compartment, air compressor, pneumatic pruning tools, cab guard, and compressor guard. The price of the outfit is $8,975, fob Milford, Conn. Maxwell Equipment Co., Ford St., Milford, Conn.

Marble Tiles, ½-in. Thick, Available for Small Homes

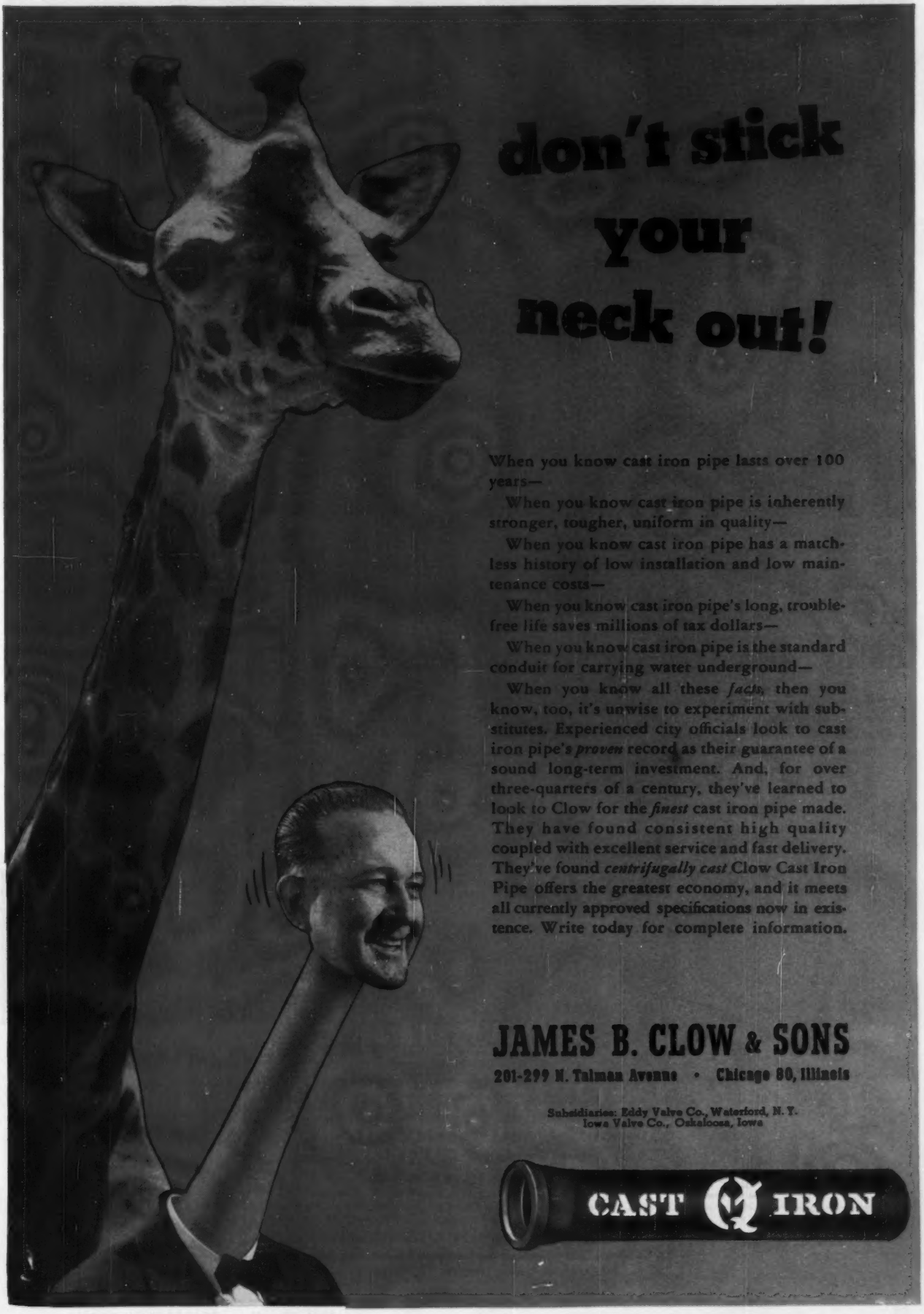
Marble wall and floor tile—thin small units of genuine quarried marble—are now available for home installation at prices said to be competitive with other fine tiles. The average price, in place, starts at $2.85 psf and varies somewhat with the costs of the marbles.

Eighteen marbles presently make up the line of wall and floor tiles, and among these are such colors as Vermont Pavonazzo, an off-white marble with blue-green veining; Florentine Gray, a light gray with charcoal veining, Westland Cipolin, a pastel green; Red Verona, with a pattern in colors from copper to reddish brown; Trieste Buff Gray; Vermont Verde Antique, a dark green veined in white; Radio Black, a black lightened with a pale gray veining; Danby Cloud White, a pure white with gray overshading, Endsley Cedar and Belgian Charcoal Gray.

Markwa tile, as it is called, is cut ½ in. thick. This lightens the weight of the marble sufficiently so that its addition to a building seldom creates a structural problem. Packed for shipment, the tile weighs only 7½ lb per sq ft.

It is fabricated in three sizes: 8x8, 8x12 and 12x12 in. Sizes smaller than 8 in. are not provided; however, true modular sizes—⅛ in. less, each dimension—are available at no extra cost.

Markwa marble wall tile has a polished finish and is furnished with the usual cushion edges. The floor tile is furnished with square edges and a matte finish, though cushion edges for floor tile can be specially ordered at a slight increase in cost. Vermont Marble Co., Proctor, Vt.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When you know all these *facts*, then you know, too, it's unwise to experiment with substitutes. Experienced city officials look to cast iron pipe's *proven* record as their guarantee of a sound long-term investment. And, for over three-quarters of a century, they've learned to look to Clow for the *finest* cast iron pipe made. They have found consistent high quality coupled with excellent service and fast delivery. They've found *centrifugally cast* Clow Cast Iron Pipe offers the greatest economy, and it meets all currently approved specifications now in existence. Write today for complete information.
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Maneuvering into position with Gardner-Denver *Tractor Jumbo*.

GARDNER-DENVER

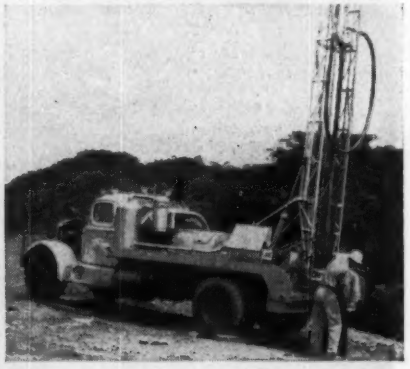
helps prevent big Panama Canal Slide

2½ million cubic yards of rock are being moved to a safe place from treacherous Contractor's Hill on a $3,391,000.00 contract. Here's some of the Gardner-Denver equipment the contractor, Tecon Construction Company, has at work on the huge project—

The *Tractor Jumbo* goes anywhere—compressed air for drilling is furnished by the Gardner-Denver water-cooled compressor mounted at the rear of the tractor.

Business end of the *Tractor Jumbo*—showing flexible hydraulic booms, long-feed drilling masts and powerful rock drills.

Mayhew rotary blast hole drill equipped with Gardner-Denver air-cooled compressor.



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KELLER TOOLS

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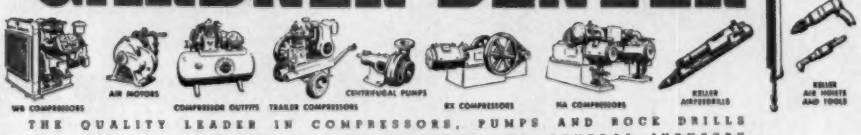


WS COMPRESSORS AIR MOTORS COMPRESSOR OUTFITS TRAILER COMPRESSORS CENTRIFUGAL PUMPS EX COMPRESSORS HA COMPRESSORS KELLER AIRPOWERDRILLS KELLER AIR HOISTS AND TOOLS

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Insulating Pipe Wrap Gets Increased Adhesive Qualities

An all weather, polyvinyl chloride pipe wrap tape is said to have increased adhesion and conformability even at freezing temperatures.

The plastic tape is an improved version of Scotchrap pipe insulation and is reported to be the first pressure-sensitive, polyvinyl chloride tape formulated exclusively for pipeline corrosion prevention.

The new material was under development for more than two years and was then field evaluated by two large distribution systems for a year as Scotchray pipe insulation No. X-1030 and X-1031. According to the manufacturer, experience has shown that the new tape can satisfactorily be applied in temperatures as low as 0 F.

Two tapes are available—Scotchrap pipe insulation No. 50 which is 10 mils thick for use in wrapping fittings and wherever maximum conformability is necessary, and No. 51 which is 20 mils thick for straight-run wrapping. Minnesota Mining and Mfg. Co., Dept. E-584, St. Paul, Minn.

Fuel System on P&H Diesel Saves Fuel and Maintenance

A new fuel system is now standard equipment on all Harnischfeger diesel engines.

According to the manufacturer, the new fuel system does away with a total of 131 separate parts and is 49.5 lb lighter in weight. Further, it is reported to be easier to understand and to require less maintenance than the former system. Another feature

For cost-cutting answers to any door need, see these TWO NEW CATALOGS!

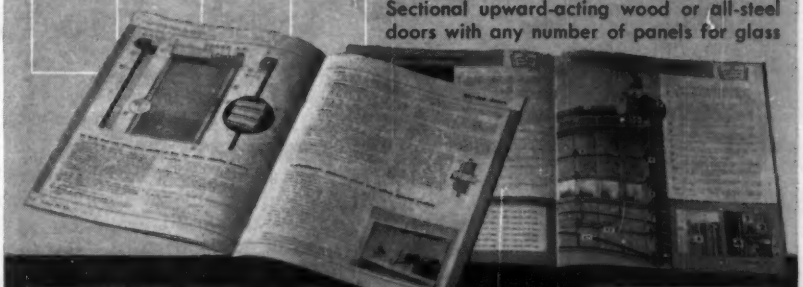
Kinnear Steel Rolling Doors
With the coiling upward action of the interlocking steel-slat curtain, *originated* by Kinnear

Kinnear Rolling Fire Doors
All-steel "Akbar" Doors, famous for safety features and labeled by Underwriters Laboratories, Inc.

Kinnear Steel Rolling Grilles
A protective, attractive openwork of steel bars and links—admits light, air and vision

Kinnear Motor Operators
Special rugged motors for time-saving push-button door operation

Kinnear Rol-TOP Doors
Sectional upward-acting wood or all-steel doors with any number of panels for glass



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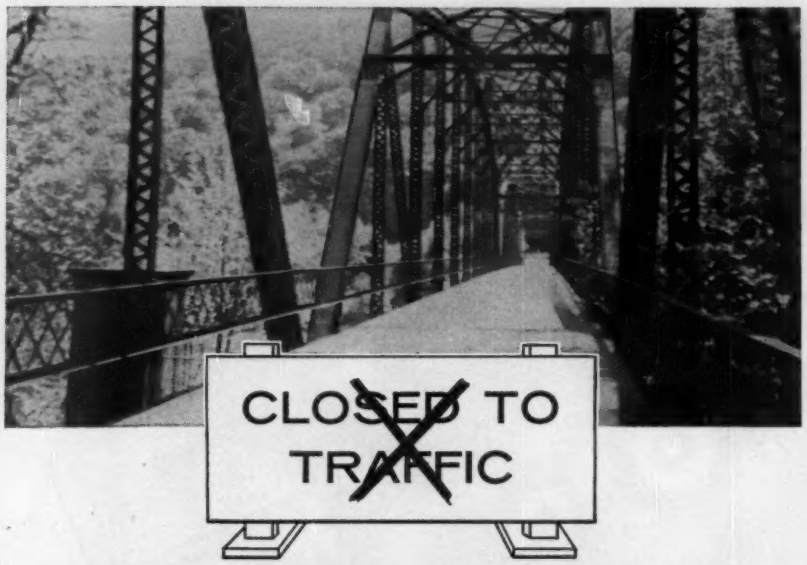
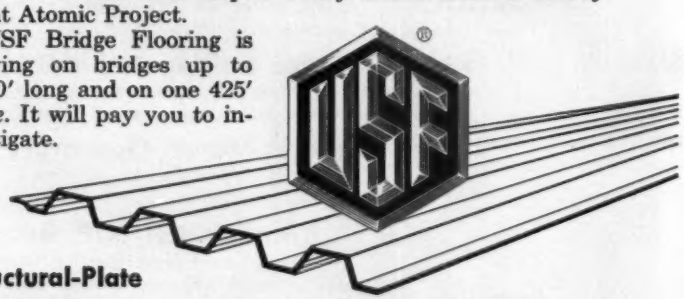


This 1000-foot bridge now stays open to traffic

The picture has changed. It frequently read "Closed to Traffic" while maintenance crews worked to patch up worn plank flooring. Then over a year ago U.S.F. Structural Plate Bridge Flooring and a bituminous surface was installed. Since that time the bridge has been in constant use, and still looks and serves like new despite heavy traffic from a nearby giant Atomic Project.

USF Bridge Flooring is serving on bridges up to 1000′ long and on one 425′ *wide*. It will pay you to investigate.



Structural-Plate

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Port Huron, Mich.

Young & Greenawalt Co.
East Chicago, Ind.

George R. Workman Co.
Frankfort, Ky.

claimed for the new fuel system is easier starting with injection automatically retarded until engine speed reaches 500 rpm. Injection is then gradually advanced, matching the increased operating speeds. The company states that this results in extremely fine idling characteristics as well as over-all smoother operation. The engines are more responsive over the entire speed range. Engine torque characteristics are also said to be improved.

Greater operating economy is reported to be obtained because calibration is inherent in the fuel pump's design—it is said to be impossible to exceed maximum fuel quantity needed. Another reason for the claim of increased economy is the sharp cutoff of injection. With this positive cutoff, pressure is instantly reduced to zero. There is no "dribble" of fuel and consequently, no excessive carbon build-up on injector tips and resultant clogging. For the same reason smoke is absent.

Premium light weight fuels are not required: P&H diesel engines with the new pump and injection system reportedly operate on any type fuel that will flow. HARNISCHFEGER CORP., DIESEL ENGINE DIV., CRYSTAL LAKE, ILL.

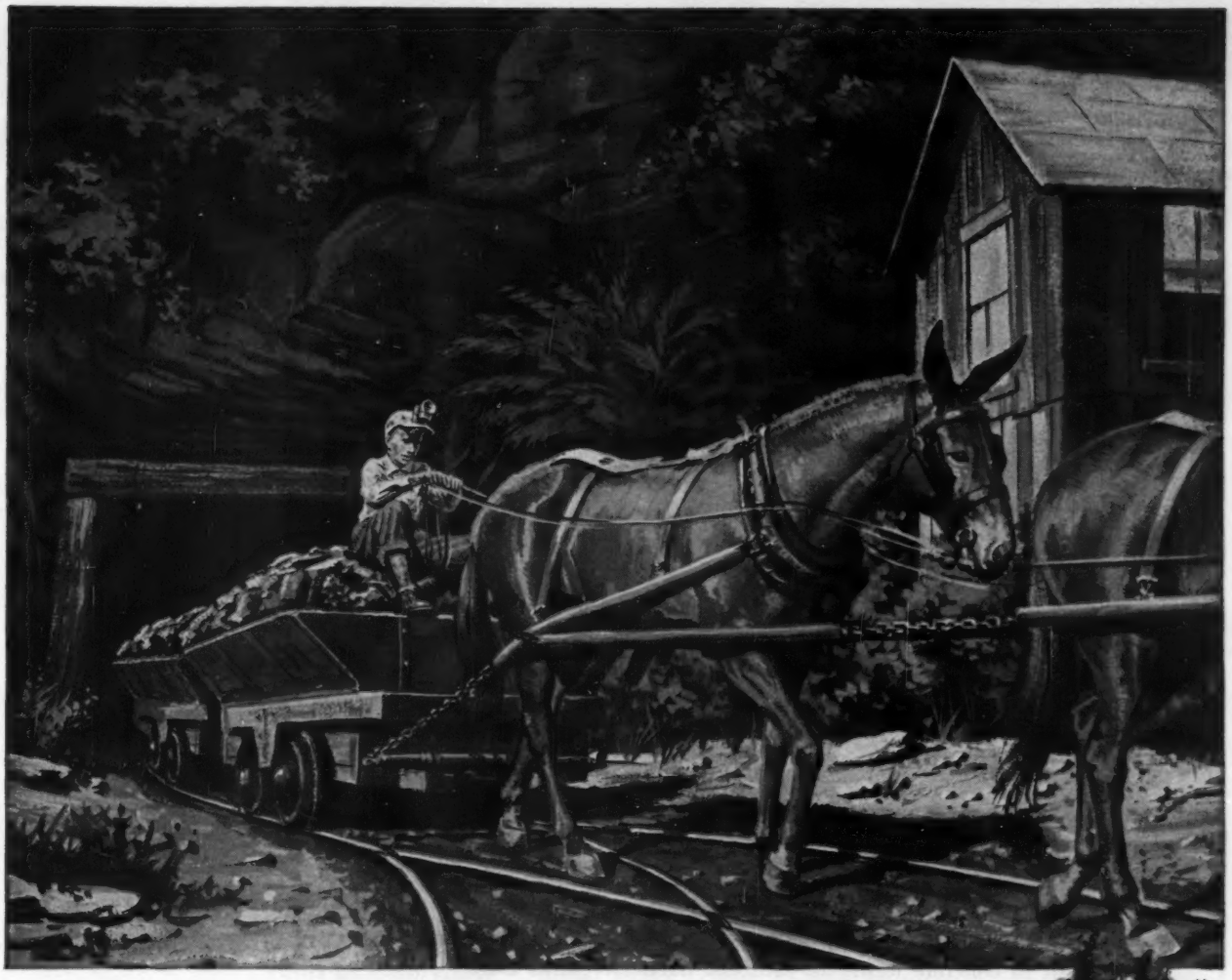
Beams Become Electric Screeds With New Screed Kit

An electric screed package assembly can be mounted on a beam to form a screed that can be pulled along by two men to strike off excess concrete while vibrating it at the same time. The screed can be used on bridge decks, airport aprons, floors, and roadways.

The package consists of a 1 hp electric motor, a vibrating unit that delivers 5,100 vpm, brackets and bolts for mounting the motor to the beam and a pair of end rollers and handles with bolts.

The motor is available in either 110 or 220 volts, single or three phase and is mounted on vibration dampeners. End roller assemblies also have vibration dampeners to isolate the vibration from the forms and the operator.

On many jobs, the screed package can be just bolted to any beam; however, for some slabs where the surface must be perfectly flat, a prestressed screed beam should be used. The prestressed beam can either be ordered from the manufacturer or built by the package purchaser. Complete drawings and directions for building a prestressed screed beam are given on the



MUSCLES OF STEEL

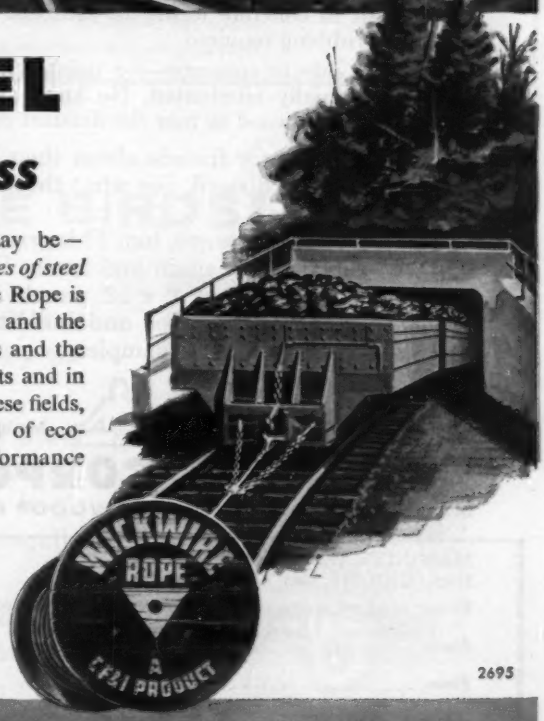
put the mules out of business

Oldtimers in coal mining can remember when mule-power was the only means of transportation in the mines.

Today's efficient coal mining demands big-capacity mechanized equipment. In modern underground mines, wire rope serves as *muscles of steel*—pulling cars from the loader to discharge point. In strip mining, also, wire rope provides the *muscle* for huge stripping shovels.

No matter what the job may be—wherever there's need for *muscles of steel*—it's a safe bet that Wickwire Rope is busy at work. In the mines and the quarries. In the logging camps and the oil fields. With the fishing fleets and in materials handling. In all of these fields, Wickwire Rope has a record of economical and dependable performance that can't be beat.

every industry benefits from wire rope



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CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
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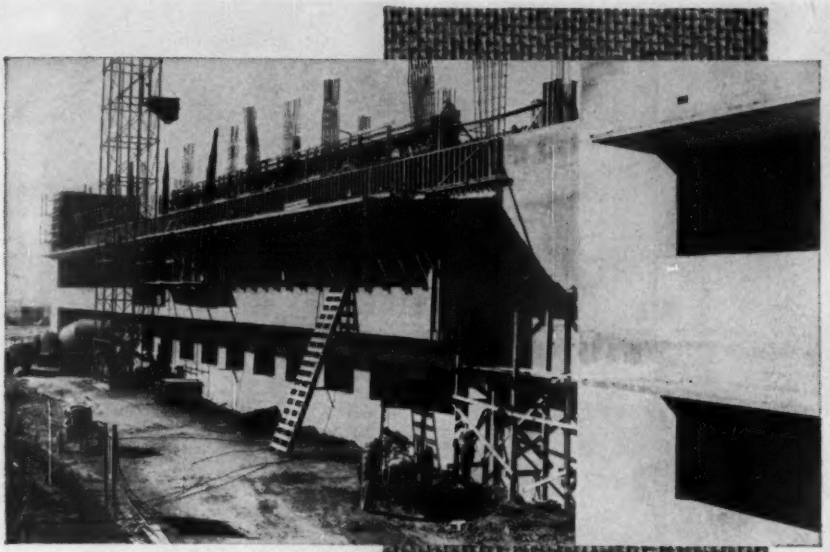

Donald M. Sharp Memorial Community Hospital, San Diego, California.
Joint contractors: Guy F. Atkinson Company and Trepte Construction Co., Inc.

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Which way will help you save most?

1. Screen side to concrete—for unpainted surfaces. Tiny projections left in concrete cut hand-rubbing costs up to 50%.

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Ask your contractor friends about their experience with this tough, strong hardboard. See what they say about savings in time and costs.

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County.....*State*.....

back of the manufacturer's Catalog No. 552. Stow Mfg. Co., 19 Shear St., Binghamton, N. Y.

Larger Drill Rods Designed To Give Improved Performance

A line of drill rods has been developed to meet the new standards adopted by the Diamond Core Drill Manufacturers Association and the Canadian Diamond Drilling Association.

Known as the "W" series, the rods will come in EW, AW, BW, and NW sizes.

Field tests conducted by the manufacturer over a period of years indicate that several distinct advantages are provided by the "W" series rods.

The over-all increase in size is said to make for a more stabilized drill string with less vibration and a minimum of ground caving.

The increased inner diameter of the rod provides a larger water passage through the drill string and reduces pressure loss, while the increased outer diameter reduces the area between the drill string and the hole wall which permits a more rapid return of sludge. E. J. Longyear Co., Foshay Tower, Minneapolis 2, Minn.

Cement Box for Aggregate Trucks Mixes As It Dumps

A new-type cement box has been developed for use on trucks in transporting aggregates to skip mixers on construction projects.

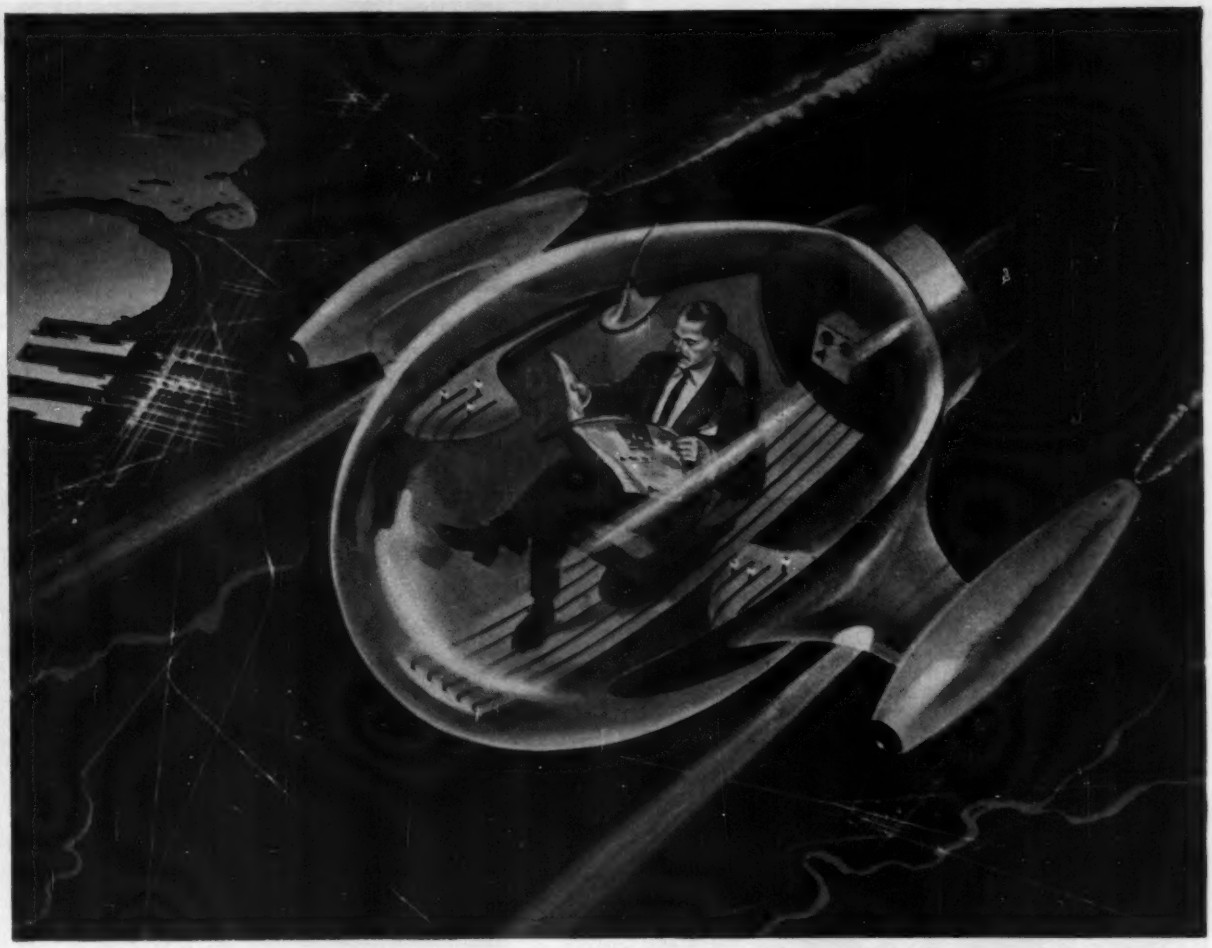
The all-steel box, attached to the partition gates on batch trucks facilitates loading and unloading of cement and mixes it with the aggregates when dumped.

The boxes, which weight 250 lb, each have a 15 cu ft capacity and are 71 in. wide, 34½ in. high, and 14¾ in. deep.

The aggregates are loaded in the trucks first thus putting pressure against the doors of the cement box keeping it tightly shut.

During unloading, as the truck bed is raised for discharging a batch into the skip mixer, the aggregates flow out, releasing the pressure on the cement box doors.

The cement starts to flow after about 4 to 5 cu ft of aggregate has been unloaded and thus forms a blanket over the aggregates. Dravo-Doyle Co., Fifth & Liberty Ave., Pittsburgh 22, Pa.



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100 years from now...

WE MAY "FLY LIKE THE BIRDS"

Time and the future will reveal many wonders...

But in that Jules Verne-like world of tomorrow you'll find one familiar note: water and gas will still be carried by the dependable cast iron pipe laid today.

Throughout the nation, records show that over sixty American cities still use cast iron water and gas mains laid more than a century ago. No pipe can match cast iron's demonstrated longevity. And today, U. S. Pipe, centrifugally cast, is even stronger, tougher, more durable.

U.S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

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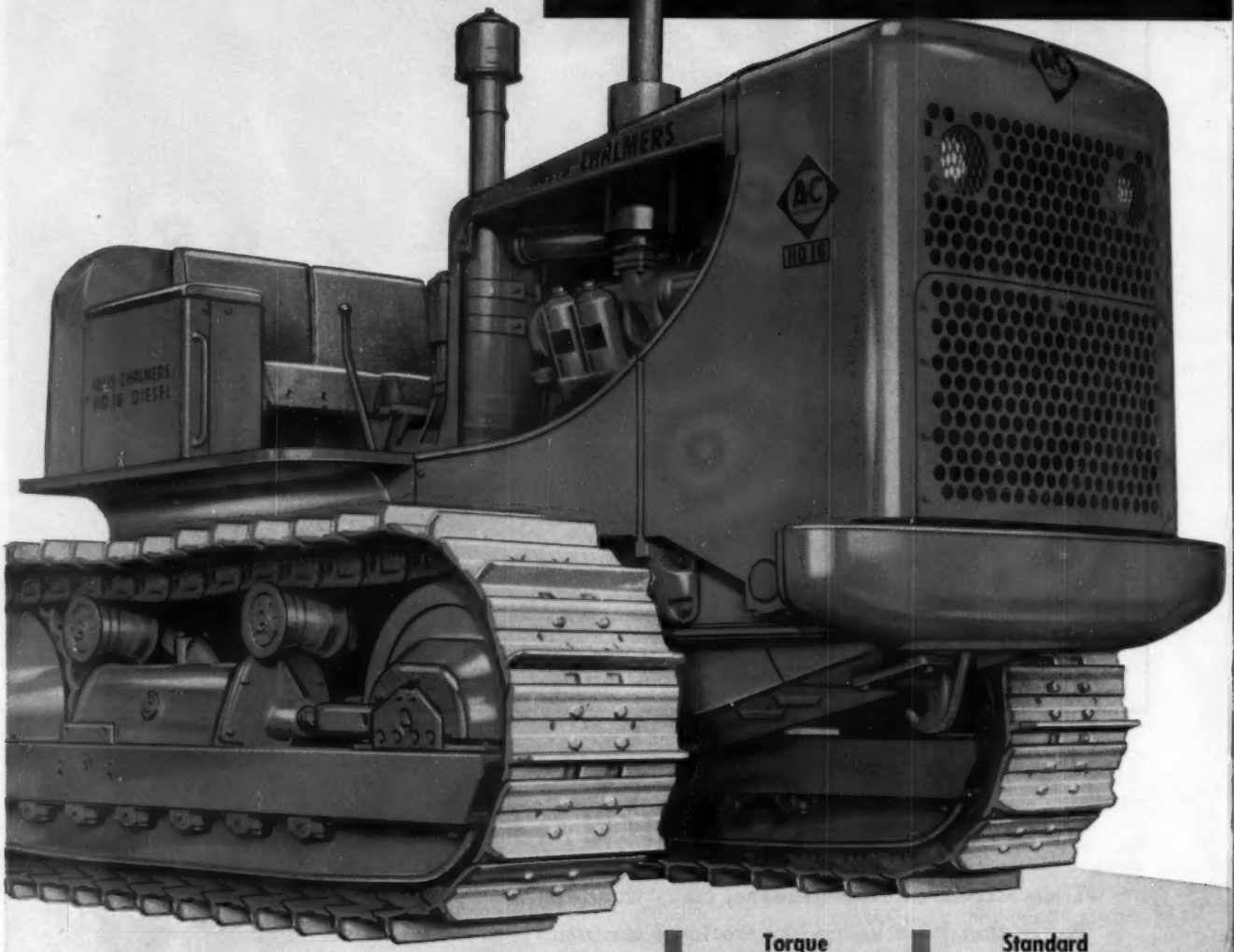
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE
CAST IRON

U. S. PIPE AND FOUNDRY COMPANY, General Office: Birmingham, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

Allis-Chalmers presents the NEW HD-16



Your choice of two outstanding drives

	Torque Converter Drive	Standard Transmission Drive
Horsepower	150 net engine hp	131 belt hp
Weight	31,600 lb	31,500 lb
Drawbar pull	up to 60,000 lb*	up to 35,945 lb*

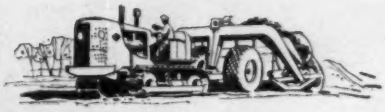
*Limited, under normal tractive conditions, to 90 percent of total weight of tractor and mounted equipment.

ALLIS-CHALMERS

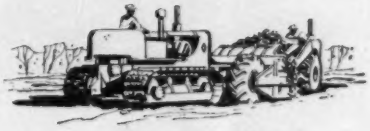
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

NEW STANDARDS OF PERFORMANCE

for a wide range of heavy-duty work

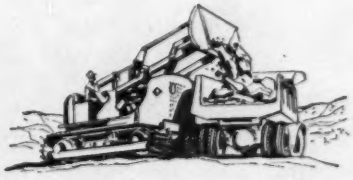


Set your sights on an HD-16! This big new tractor not only brings you *more* power for bigger jobs . . . it makes more effective use of horsepower, with a brand new Allis-Chalmers diesel engine and your choice of two new drives — the job-proved torque converter or the easy-shift standard transmission. Either way, the HD-16 brings you a new high in tractor-operator efficiency . . . a new high in work done under even the toughest conditions.

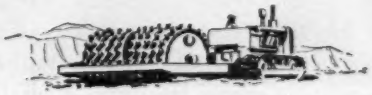


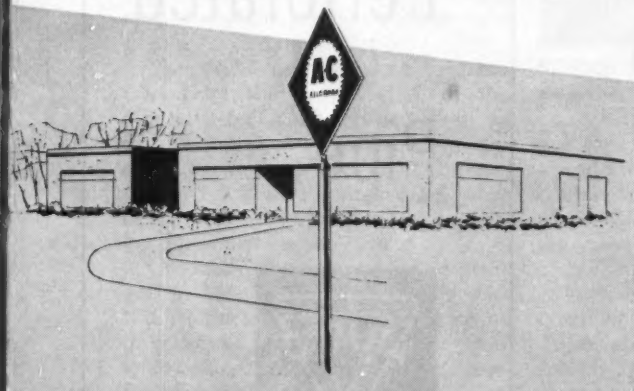
NEW STANDARDS OF DEPENDABILITY AND LONG LIFE

under *all* conditions!



The HD-16 follows the Allis-Chalmers *advanced basic design*, with such important features as its all-steel, Box-A main frame and one-piece steering clutch and final drive case . . . straddle-mounted final-drive gears with tapered roller bearings . . . unit construction . . . simplified lubrication and service designed with *better* maintenance in mind. What's more, it is newly engineered throughout to provide big safety factors in all components . . . plus outstanding new features like the new Allis-Chalmers heavy-duty diesel engine, new "wrap-around" radiator guard, husky new transmissions, new true-dimension track, and many others.





All in all, the new Allis-Chalmers HD-16 brings you an outstanding combination of performance and long life with both mounted and drawn equipment . . . a higher rate of production, more working time, more work done, LOWERED JOB COSTS. You OWE it to yourself to get all the facts now from your nearby Allis-Chalmers dealer.

STRONG JOINTS ARE EASY
with Armco Subdrainage Pipe

There's never a worry about clogged subdrainage lines when you use Armco Perforated Pipe under your highways. Strong, tight joints, made with simple coupling bands, prevent malalignment and disjointing. Water enters the pipe only through holes that have been scientifically placed and of the proper size to admit ground water, yet exclude clogging solids.

Add this "controlled infiltration area" to the advantages of flexible, corrugated metal design, and you have every assurance of continuing service from your subdrainage installations. Armco Pipe has ample strength to withstand the impact and vibration of heavy traffic without damage. Your subgrades remain dry and stable.

There's a size and type of Armco Perforated Pipe for every subdrainage need. And long lengths, up to 20 feet and more, mean there are fewer pieces to handle and fewer joints to make than with short section, rigid pipe. Installation is speeded; costs are low.

Wherever you have unwanted ground water, Armco Perforated Pipe will provide the lasting, economical answer. Write for data. Armco Drainage & Metal Products, Inc., 4325 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco

Perforated

Pipe

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LIGHTWEIGHT SPANS over the Nimy-Blaton Canal, France are made of prestressed concrete girders supported on both compression and tension rockers. The use of tension rockers cuts down mid-span moments and therefore the depth of the girders.

Span Ends Pulled Down to Get Shallow Girders

Advantages of continuity are obtained in single spans by holding down girder ends with tension ties to reduce mid-span moments

In a series of eight concrete highway bridges over the Nimy-Blaton Canal in France, relatively shallow depths of continuous girder construction were obtained for single spans by inducing negative moments through use of a tension tie at each end of every girder. Moments at mid-span were reduced by this measure, and 190-ft spans with a girder depth of 4-ft 11 in. at the center were obtained. Just inside these tension ties at the span ends, compression rockers were placed to support the span.

The problem arose when the contractor for the third section of the Nimy-Blaton Canal, between Hautrage and Blaton, had to have shallow girders for two of the eight bridges widened in order to satisfy canal barge clearances and to connect with existing highways.

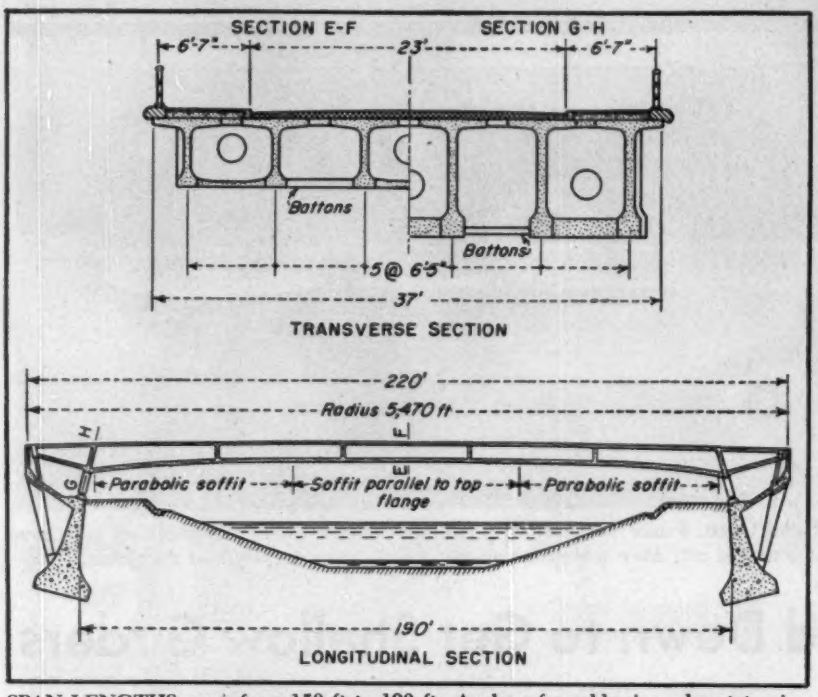
Originally, the authorities had planned to have the other six bridges in the contract simply supported spans in prestressed concrete, but they had left the final decision as to their construction up to the contractor. Since the spans ranged in length only from 150 ft to 190 ft, it was decided to reach a common design for all. Due to the re-use in forms and falsework, the repetition of concreting operations and the marked similarity of designs, it was decided to use the tension-and-compression support system on all spans. The two longest bridges over the canal have a depth to span ratio of 1/35.

FORMS for the eight highway bridges are made of movable wood sections covered with sheet metal. Cable ducts are positioned on reinforcing for post-tensioning.

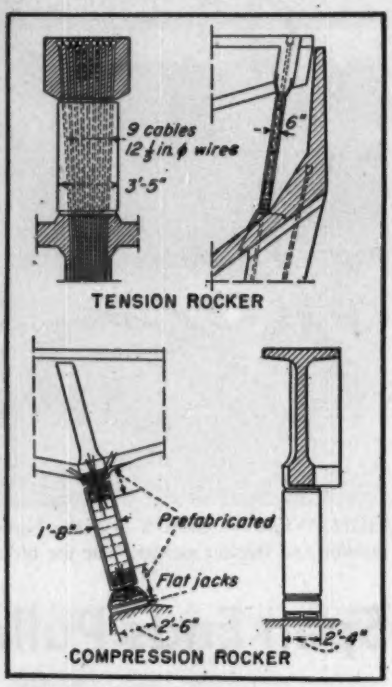
Each of the eight bridges is composed of concrete I-beams of variable depth, and each I-beam rests on four rockers, an inner set of two working in compression and the outer ones in tension. Although there is no fixed support, the spans are stable since horizontal forces are taken by flexure in the main girders. There are five I-beams in the shortest span and eight in the longest.

• **Re-use of forms**—In the accompanying drawings, it will be noticed that the central section of the intrados of the girders is parallel to the extrados. Forms for these central sections of the bridges could thus be reused for every span. The necessary variation in girder depth for differences in span lengths, is concentrated in the parabolic soffits at the ends of the spans and, for these, separate forms were required.

Alternate pairs of girders are connected by diaphragms over the tension and compression rockers and at four points in the span. Thicknesses of the



SPAN LENGTHS range from 150 ft to 190 ft. Anchors for cables in endmost tension rockers lie at the point of intersection with reaction line from the compression rockers.



COMPRESSION ROCKERS are heavily reinforced, tension ties heavily prestressed.

diaphragms range from about 8 in. at mid-span to about 12 in. at the exterior tension rocker.

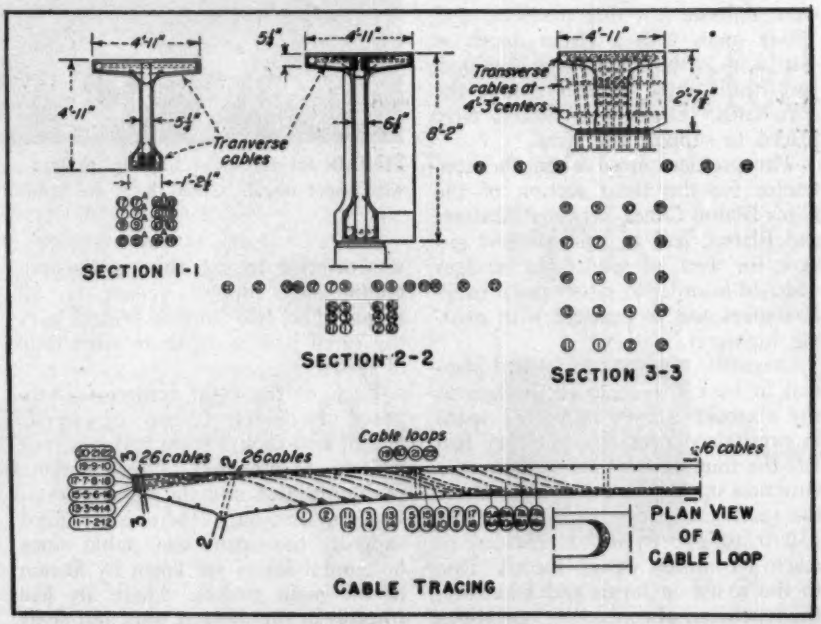
Top flanges of the girders are connected by 6-in. thick slabs, which also serve as the deck, but on the soffits only alternate pairs of beams are connected by slabs varying in thickness from 5-in. thick at mid-span to 7 in. at the compression rockers. Slabs between the bottom flanges of two girders make a box girder to resist torsion and assure a better transverse distribution of loads over the bridge.

• **Tension rockers prestressed**—Due to the extremely strong forces on the tension rockers they are heavily prestressed with nine cables each (see drawing). Cables are anchored at the upper end of the rockers in the girders and on the lower end in the foundation. The compression rockers are heavily reinforced and their ends butt against prefabricated caps. The lower end cap rests on a hydraulic flat jack, in turn, resting on the foundation. After construction operations are over the flat jacks adjust the compression rocker to the proper height.

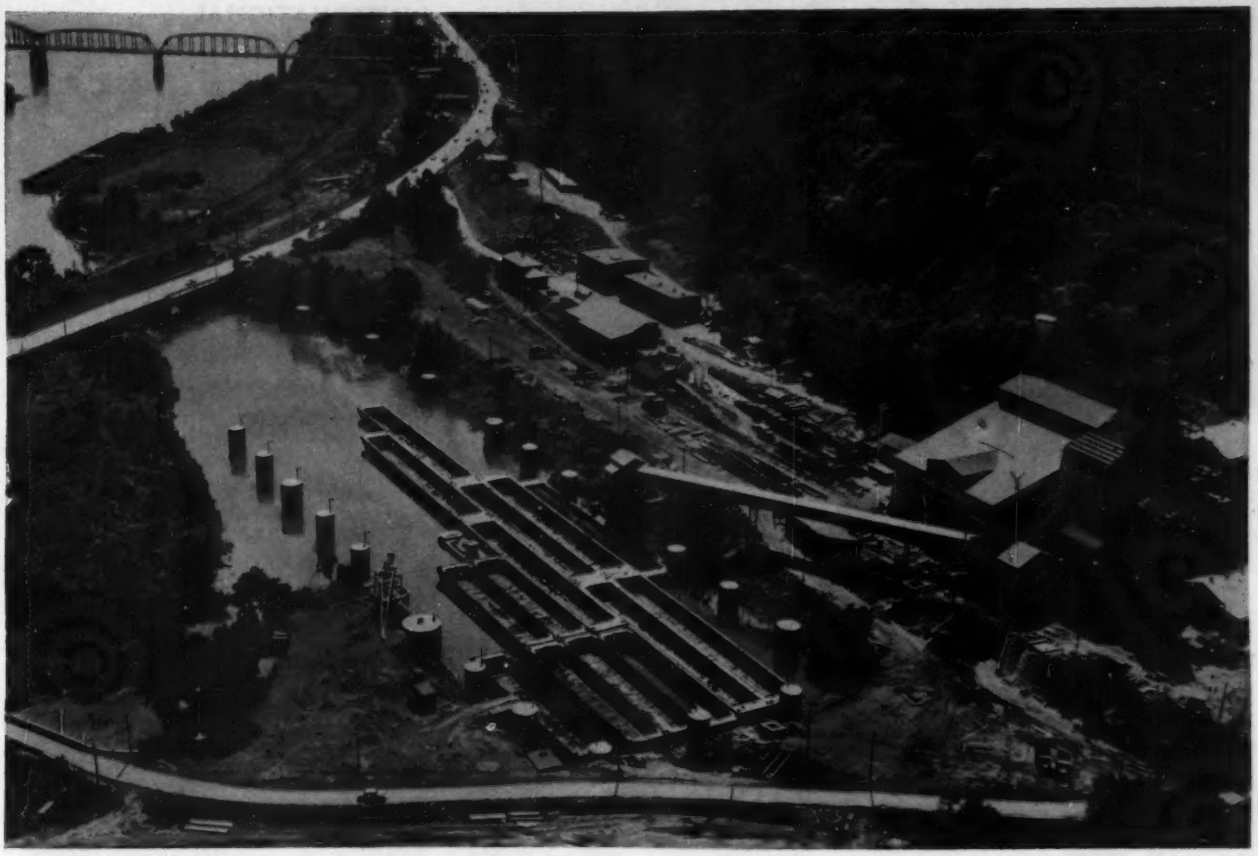
Two types of abutments were used for the eight spans. Where the ground was soft and good soil could only be had at considerable depth, the abutments are slightly tilted wall-types with spread footings. From the rear of these footings oblique columns of concrete reach up through the soil to the lower ends of the tension rocker rest. The prestressing cables in the tension rockers run down through these pillars and are anchored at a point in the foundation footing which intersects the line of reaction from the compression rockers.

The second type of abutment, used where good bearing soil conditions are found near the surface, is a lower and more massive type of block construction, but again with the tension rocker cables anchored at the point of intersection with the reaction line from the compression rockers.

• **In situ concreting**—Although the design of the bridges would seem to indicate the advantage of a central plant and precasting techniques, it was decided to cast the concrete girders in situ due to the difficulty of transporting large members over the local roads. It was specified that the bridges be built before the canal was dug in order to



CABLE LAYOUT for girders in spans are roughly similar as are sectional dimensions.



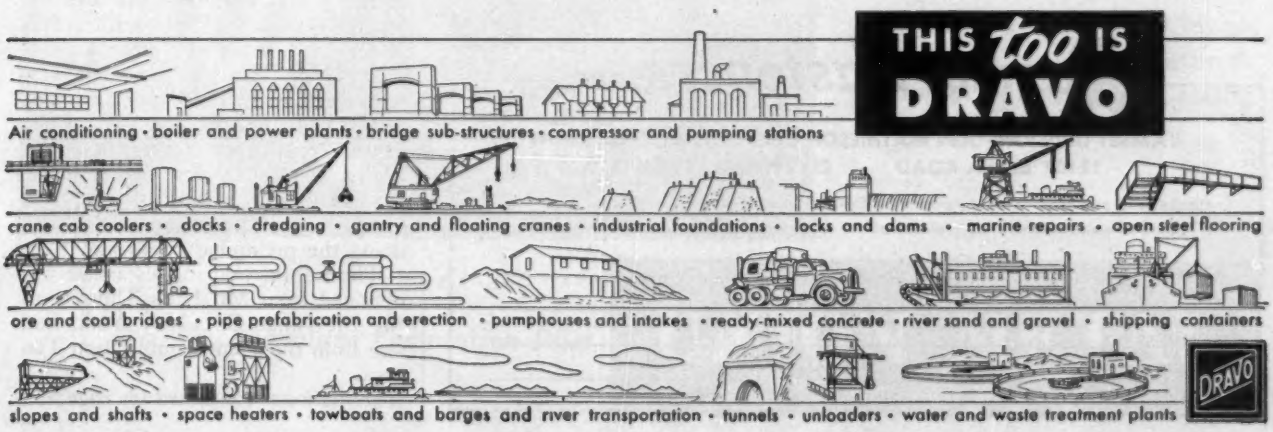
TWO-WAY HARBOR SERVES HARMAR COAL PROCESSING PLANT

At its new preparation and cleaning plant along the Allegheny River near Pittsburgh, Harmar Coal Company is utilizing the advantages of water transportation in two separate ways. Coal received in barges from another mine is unloaded and added to coal mined at the plant location. Then, all coal from the processing plant is loaded on barges for shipment to a steel mill.

This efficient, large tonnage operation is handled smoothly in a modern harbor constructed by Dravo Corporation. It consists of 25 steel sheet pile cells, two of which form a foundation for an unloading crane and receiving hopper.

This type of waterside facility, pioneered by Dravo, can be adapted to the needs of all industry, large or small—from a single cell to installations over a mile in length. In the last few years alone, more than 75 separate docks have been constructed for chemical and steel plants, coal mines, utilities, railroads and others.

This is just one of many ways Dravo has been serving business and industry for more than 60 years. Dravo considers customer satisfaction an essential factor in all its products and services. DRAVO CORPORATION, GENERAL OFFICE, PITTSBURGH 25, Penna.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maintain traffic at all times. This meant that erection of falsework was comparatively easy and made for a considerable saving in materials. Only for one bridge was it necessary to drive piles in an existing canal and support falsework on I-beams resting on the piles.

Wooden forms covered with sheet metal were used, the forms being moved from site to site by crane and truck. Internal and external vibration were used in placing concrete for every girder, and the work progressed at a rate of one girder every four days.

• **Phased prestress**—Prestressing the bridges—longitudinally, transversely, and in the tension rockers—was carried out in six steps:

1. Longitudinal cables in the girders were post-tensioned three days after concreting so that these members carried the deck and soffit slabs while being supported on the compression rockers and two rows of falsework piles set at approximately quarter points in the span.
2. Then the deck and soffit slabs and the diaphragms were transversely prestressed.
3. Cables in the tension rockers were then post-tensioned to their full extent.
4. Final increment of prestressing in the longitudinal girder is induced. The deck slab is subject to a large part of the longitudinal prestressing, and tensile stresses which might be induced by shrinkage are eliminated.
5. Cable ducts were then grouted in under pressure.
6. The flat jacks under the compression rockers were, last of all, expanded the proper amount, to reduce moments at mid-span, and then filled with grout.

Freyssinet cables used in prestressing were composed of twelve ½-in. wires.

Just before the bridges were put in service, static and dynamic tests were carried out. Under total live load the longest span, 190 ft, showed a deflection of only ⅜ in., or a ratio of about 1:2,800. In spite of their relatively light weight, the bridges are very rigid.

The eight bridges were part of the general contract for digging the Nimy-Blaton Canal. Contractors were the Brussels firm, SOCOL, with the Paris firm of consulting engineers S.T.U.P. doing the preliminary drawings.

The information in this article was obtained from Mr. Niels Thorsen, of the Freyssinet Co., New York, and also from the French publication Travaux.

(*International continued on page 86*)

MONOTUBE STEEL PILES

. . . easily extended right on the job

All it takes is a fast, simple weld to extend Monotube steel piles to any required length. Either standard sections, or for added economy, cut-offs from previously driven piles can be used. And while one pile is being extended, driving continues on an adjacent pile. There's *no* lost time!

Here's another important point to remember . . . Monotubes combine light weight and ease of handling with cold-rolled strength for *faster* driving . . . and at lower cost! On most jobs, driving can be handled quickly, easily by light, mobile rigs. Find out for yourself how Monotube piles save time and money on *all* types of foundation work. Write today to The Union Metal Manufacturing Company, Canton 5, Ohio, for your copy of Catalog No. 81.

Monotube Foundation Piles

UNION METAL

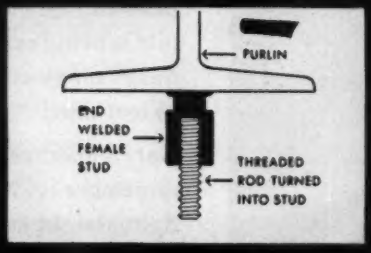
"STUD" NELSON HANGS A

FIXTURE

IN A FLASH!

Watch a contractor go to town with the NELWELD® system, hanging electrical fixtures, securing conduit and cable runs, clamping pipes, and fastening sprinkler heads. You'll see split-second end-welding of female studs, standard threaded studs, shoulder types and eye bolts with the bantam-weight NELWELD gun.

In a flash the stud becomes an integral part of the structure and in minutes the installation is complete.



Call in your NELSON Fastening Engineer for consultation. His specialty is cost reduction; his stock in trade, stud welding. Write for details—Bulletin 450.1.

Stud Nelson

Fasten it Better at Less Cost with

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Please send more information on hanging electrical apparatus and other cost-saving applications.

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NELSON STUD WELDING DIV OF GREGORY INDUSTRIES, INC LORAIN, OHIO

INTERNATIONAL

Australia Plans for Power From Atomic Plants

Australia hopes to purchase her first atomic power plant within the next five years and it is almost certain that purchase will be effected in England.

English manufacturers expect to be able to submit a definite bid before the end of 1957 and a complete atomic power plant will be available for delivery to Australia before the end of 1960. Unofficial estimates are understood to be "reasonable".

The Australian Atomic Energy Commission has appointed its Chief Engineer. He will be Dr. G. C. J. Dalton, 38, at present Dean of the Engineering School, Auckland University College, New Zealand.

Longest Submersible Span To Be Built in India

The world's longest submersible bridge is to be built over the Chambal River, near Agra, India, according to the Government of India's Public Works Department here. The contract has been let for the bridge that will carry India's national highway No. 3 linking Agra to Bombay. It will be 2,434 feet long with foundations 60 feet below low water level and spans up to 143 feet. It is designed to be submerged under 27 feet of water during monsoon floods and to withstand shocks of great force when the level of the river reaches the decking.

The contractor, J. C. Gammon, Ltd., London, is also building a 3,300 foot road bridge of prestressed concrete over the Sone River in the Mirzapur district of Uttar Pradesh (North India). When completed this span will be the longest prestressed concrete road bridge in Europe or Asia.

Bids Asked for Pipeline Construction Near Vancouver

The British Columbia Div. of Imperial Oil, Ltd. will undertake a $3 million pipeline-warehouse construction project in a shift of plant facilities in the Vancouver area.

The project includes a 7-mi pipeline —¾ mi of which will be under water— to carry petroleum products between the company's Ioco refinery on the north shore of Burrard Inlet to a new warehouse to be built in suburban Burnaby.

Contracts for construction have not been let, but bids have been called for. Plans have been submitted to Ottawa for federal approval.

OBITUARIES

Col. Edmund K. Daley, 47, engineer inspector general, Office of the Chief of Engineers, died April 23 in Tripoli while inspecting the Mediterranean Corps of Engineers Division. He was graduated from West Point in 1928. During World War II he served as engineer, Mediterranean Base Section; commander, 20th Engineer Combat Regiment, in the Sicily campaign; commanding officer, 1171st Engineer combat group, in the Normandy, Northern France, Rhineland, Ardennes and Central Germany campaigns.

Phillip A. Kinzie, 68, retired Bureau of Reclamation engineer at Denver and co-inventor of numerous pieces of equipment used in dam outlet works, died April 9 in San Diego, Calif. He joined the bureau in 1920 as a draftsman and became a senior engineer in 1940. At the time of his retirement in 1944 he was head of the gates and valves section of the bureau's mechanical branch.

Arthur G. Leupold, 65, civil engineer for several Erie County, N. Y., communities, died April 21 in Buffalo, N. Y. At the time of his death he was an engineer for the village of Depew and the towns of Eden and Lewiston.

George B. Bassett, 93, hydraulics engineer, died April 14 in Buffalo, N. Y. He built more than 60 waterworks in western New York before founding and serving as president of the Buffalo Meter Co.

Thomas P. Judge, 48, Helena, Mont., contractor and construction engineer, died April 1. He was vice-president of Askevold Construction Co. before forming his own construction firm.

John J. Hayes, 69, partner in Hahn & Hayes, Toledo, O., died April 1. A registered structural engineer as well as an architect, he was responsible for planning many of Toledo's churches and public buildings.

Ziba B. Phelps, II, 49, a Pennsylvania consulting engineer, died April 12 in Beloit, Kan. A specialist in designing turnpikes, helped design the original Pennsylvania Turnpike.

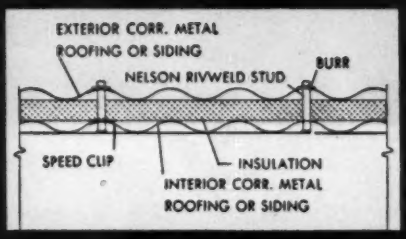
John N. Burford, 60, an engineer with the Army Corps of Engineers, died April 3 in Louisville, Ky. He was a graduate of Massachusetts Institute of Technology.

"STUD" NELSON FASTENS

INSULATED CURTAIN WALLS IN A FLASH!

S-s-s-t! . . . a familiar sound repeated a thousand times* a day (per stud welder) in the erection of curtain walls . . . a whisper which has made a resounding impact on forward-thinking architects and builders. It's the sound of the NELWELD® gun end-welding a Rivweld stud in an effortless instant!

Insulation and corrugated metal sheets impaled over the studs, then riveted, complete this modern, efficient "sandwich" type wall.



Sparks the imagination, doesn't it? . . . suggests infinite possibilities for sturdy, low-cost, *field-assembled* construction . . . lets you know that hundreds of applications are already pre-engineered for you. Consult your local Nelson Field Engineer. He's an idea man trained to reduce costs and improve fastening. Write for details.

*NOTE: 800 to 1700, average stud welding rate.

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Please send your new 20-page booklet—"The Curtain Wall Story."

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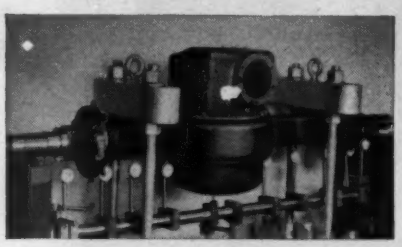
Matched to your toughest conditions. Steep grades! Heavy loads! Muddy going! Every adverse condition is duplicated in our "Torture Chamber" to produce axles that can "take it". Stock axles are picked at random and subjected to the equivalent of a "chuckhole" shock every 4 seconds, 24 hours a day, for months on end. Another test simulates an uphill pull 3,000 miles long. Only tests as rugged could produce axles so tough.



GREATEST ADVANCE SINCE

exclusive double-reduction design 2-speed gear ratio spread!

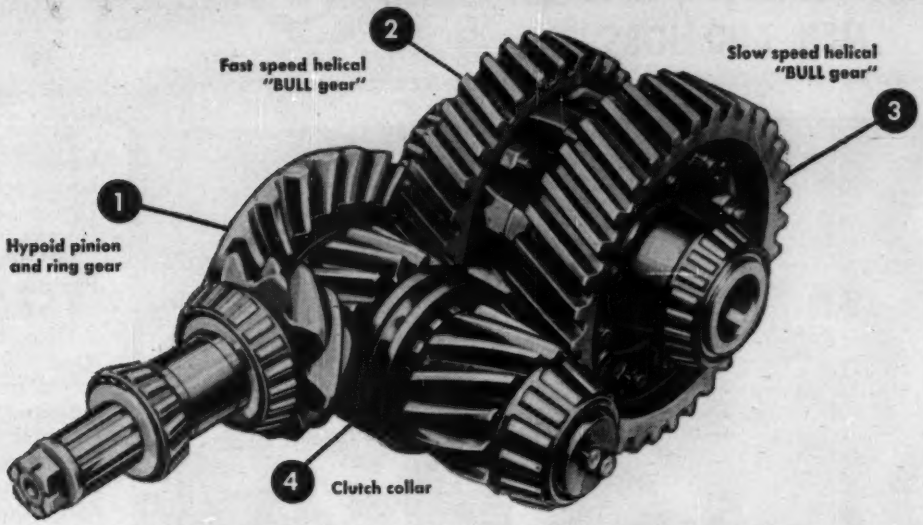
Tailor-made power exactly to your trucking needs with Timken-Detroit!

Unequalled flexibility! TDA 2-Speed Axles, give an almost *unlimited* choice of gear ratios. The Timken-Detroit design is so simple and basic, that an ordinary mechanical change lets you tailor power exactly to your trucking needs. Where other 2-speed axles limit you to only a single gear spread of 37%, TDA offers a range all the way from 28% to 49%.

TDA meets varied needs! The variety of hauling conditions that today's trucks must meet call for maximum speed and power flexibility. Other 2-speed axles are just too limited to meet this need. On the other hand, TDA's simple double reduction design gives complete flexibility. Gear ratio can be easily changed without weakening the axle unit in any way.

How you benefit! TDA not only gives you a much wider power range, but also, all the advantages of a stronger, sturdier, smoother operating design. Since helical "Bull" gear sets operate independent of one another, there is no overheating even after indefinite running in low speed. Bigger huskier TDA parts last longer, stand up better under tough usage.

Less down-time, longer axle life, fewer repairs, higher fuel economy, lower operating costs and higher profits. These are some of the important reasons why so many leading manufacturers and operators everywhere specify Timken-Detroit 2-Speed Axles.



How the exclusive double-reduction design of

TDA 2-SPEED AXLES

gives you greater speed, endurance, and economy!

This is HOW TDA's 2-Speed principle works! A husky hypoid ring gear and a bigger, stronger pinion set (No. 1 in illustration above) provide the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second step*. Both sets are of balanced size and capacity. One set (No. 2 in illustration) is for fast speed; the other (No. 3) is for slow speed. The clutch collar (No. 4) moves to right or left to engage one helical pinion or the other.

WHY this principle offers far wider spread! Because the TDA design is so simple, the ratio may be changed merely by changing the low speed helical gear pinion. Unlike ordinary designs which are limited to 37%, TDA offers spreads of 28%, 37%, and 49%. In effect, this flexibility gives you your choice of power ratios to exactly match your needs.

Greater endurance, longer truck life with TDA. TDA's simple design eliminates small complicated parts and midget size gears. Large hypoid helical design gives more teeth in contact – quieter operation and far less strain. Bearings are larger, too. Helical "Bull Gears" not in use idle, further reducing wear. All this adds up to longer engine life... and more efficient and profitable operation under all conditions.

THE FIRST 2-SPEED AXLE

gives TDA world's widest

TIMKEN
Detroit
AXLES

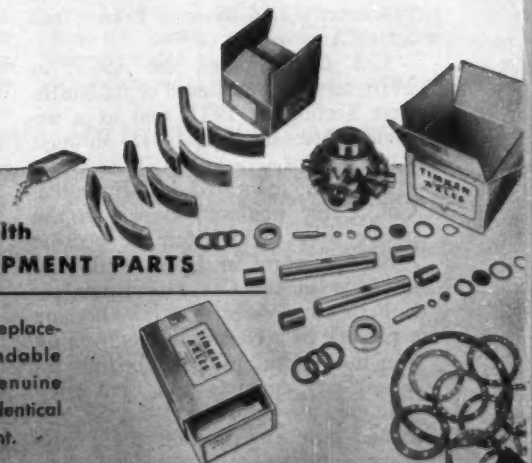
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted Standard — TDA — SAE

TRADE MARK REGISTERED

World's Largest Manufacturers of Axles for Trucks, Buses and Trailers

Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio New Castle, Pennsylvania



Increase axle life with
GENUINE TDA EQUIPMENT PARTS

Take no chances with ordinary replacement parts. For sure, dependable factory-type jobs, specify genuine Timken-Detroit axle parts kits—identical to your axles' original equipment.

Each kit is complete — gives you everything you need in one handy package. Gaskets and shim parts, brake liners, steering knuckles, differential gears— for every size of brake and axle. Order by number from your dealer. Cut labor and adjustment costs. Get trucks back on the road quicker.

WILLIAM N. CAREY leaves ASCE and

W. H. WISELY moves up as his successor.

ASCE's Executive Secretary Retires

William N. Carey retired last week as executive secretary of the American Society of Civil Engineers, a post which he has held for the last ten years. Succeeding him as national secretary is William H. Wisely, who has been serving as associate secretary since the first of the year.

Col. Carey's tenure as executive secretary marked a period of steady growth in ASCE membership and in expansion of the work of the society's technical divisions. To meet these developments, he took an active part in speeding up the handling of applications for membership in the society and in changing the method for distribution of ASCE technical papers to minimize waste and facilitate study of the papers by members. He also took an active part in developing closer ties between the engineers of this country and those in Europe and South America.

Col. Carey joined the ASCE in 1916, served as president of its Northwest Section in 1931, and as a national director from 1941 through 1943.

Born and educated in Minnesota, Col. Carey was well known in the public works field before he became ASCE secretary in 1945. Following service with the Corps of Engineers in France in World War I, he became a partner in a consulting engineering firm in St. Paul and later became assistant city engineer and then engineer for the city. In 1933 he was named state engineer for the Public Works Administration and subsequently supervised the design and construction of the $17-million sewage plant for the Minneapolis-St. Paul Sanitary District. He opened his own office as consulting engineer in St. Paul in 1938 and continued that practice until called to active military duty in 1941. The following year he was appointed chief engineer of the Federal Works Agency. It was from that post that he came to the ASCE.

Col. Carey's successor, William H. Wisely, was formerly executive secretary of the Federation of Sewage and Industrial Wastes Associations and editor of the federation's journal. A civil engineering graduate of the University of Illinois, he has served as assistant engineer in the Illinois State Water Survey, assistant sanitary engineer in the Illinois Department of Public Health and engineer-manager of the Urbana and Champaign Sanitary District.

A special lecturer in civil engineering at the University of Illinois at the time of his recent appointment, the new executive secretary also served as a representative of the state of Illinois on the Ohio River Valley Water Sanitation Commission.

Douglas Parsons Honored By Commerce Department

Douglas E. Parsons of the National Bureau of Standards has been awarded the Gold Medal for Exceptional Service by the Department of Commerce. Presented by Commerce Secretary Sinclair Weeks, the award is a tribute to Parsons' achievements in the field of building research.

Parsons has been a member of the bureau's staff for 30 years and has been chief of the Building Technology Division since its formation in 1947. He previously headed up the Masonry Construction Section and the Mineral Products Division.

His contributions to research in the fields of building practices, materials, structures and equipment have received frequent recognition. Among Parsons' other awards are the American Concrete Institute's Wason Medal for research and the Lindau Award of the American Society of Testing Materials for outstanding work in the field of reinforced concrete design.

A past president of the American Concrete Institute and a past chairman of the Building Research Advisory Board of the National Research Council, Parsons is a member of a number of professional organizations, including ASCE and the Highway Research Board.

Retired Army Engineer Joins Staff of Bechtel

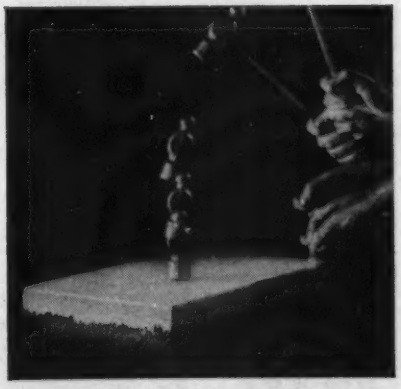
John P. Buehler, who recently retired from the Corps of Engineers after 20 years of active duty, has been appointed an executive engineer with the Bechtel Corporation. He will be attached to the power division at the firm's San Francisco headquarters, assisting vice president John R. Kiely on special duties and assignments, particularly those in the hydro-electric field.

During his service with the Corps of Engineers, Col. Buehler had charge of many large water developments and hydro-electric projects. He was

(*Continued on page 92*)

J. P. Buehler

NEW PRODUCT combines insulation and finish in single, durable, waterproof block



EASY MAINTENANCE is built right in *Duraface* FOAMGLAS. It will withstand greater impacts than cement plaster finishes. Its integral finish can't blister or peel.

Now you can make your insulated walls entirely of glass including the finish on the insulation. You can do it by using a single new product . . . *Duraface* FOAMGLAS. That's Pittsburgh Corning's unique cellular glass insulation fused with a white crust of denser, sealed glass cells.

You can scrub it or hose it down. It's waterproof.

You don't have to worry about fire or vermin. It's completely inorganic.

You can avoid trouble with cracking or bulging of plaster finishes. *Duraface* FOAMGLAS has an integral finish that can't peel or separate. It'll take greater impacts than ordinary finishes.

This remarkable new product may solve *your* insulating and finish problems! Wouldn't you like to see a sample and get descriptive folder? Please use coupon today.

"Duraface FOAMGLAS" is a trademark of Pittsburgh Corning Corporation.

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Dept. K-55, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

Pittsburgh Corning Corporation
Dept. K-55, One Gateway Center
Pittsburgh 22, Pa.
(In Canada: 57 Bloor St. W., Toronto, Ontario)

☐ Please send me a free sample of *Duraface* FOAMGLAS and your new folder with detailed information.

☐ Send engineer to discuss its use.

Name_____ Title_____

Company_____

Address_____

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...ANOTHER BRAND NEW

KERRIGAN SERVICE TO INDUSTRY

STAINLESS STEEL Grating and Stair Treads — new boon to industries where grating must withstand acids and corrosion! KERRIGAN *Weldforged* Grating — one-piece, inseparable units, made in all types A.I.S.I. and S.A.E. Standard Stainless and heat-resisting steels and electronically resistance welded to stand up under the severest kind of punishment AND FABRICATED TO BE FREE OF ANY "ACID-TRAP" RIVETS OR NOTCHES!

Kerrigan also offers you a complete *custom* service: shop drawings are sent for your approval and grating is fabricated to your exact specifications (with finished grating match-marked for easy installation). Let us send you detailed information. Write now for our new catalog on stainless steel grating containing engineering data.

KERRIGAN IRON WORKS, Inc.

General Sales Office — 274 Madison Ave., New York City

recently responsible as district engineer in Seattle for the design and construction of Chief Joseph Dam on the Columbia River and the Alberni Falls Dam on the Pend Oreille.

City Bridge Engineer Will Retire in June

J. Frank Johnson, director of the Division of Bridges in New York City's Department of Public Works, will retire on June 1, after completing 52 years of municipal service.

Since 1948 he has had charge of the department's bridge construction, maintenance and operation. His latest project has been the new $6.5-million Welfare Island Bridge, expected to be opened to traffic next week.

Johnson started his engineering career as a rodman on tunnel construction for the New York subway system in 1903. He was later associated with several city departments as assistant engineer and served as director of the Construction Division of the Department of Public Works before undertaking his present assignment.

E. W. Carlton Heads Up University Department

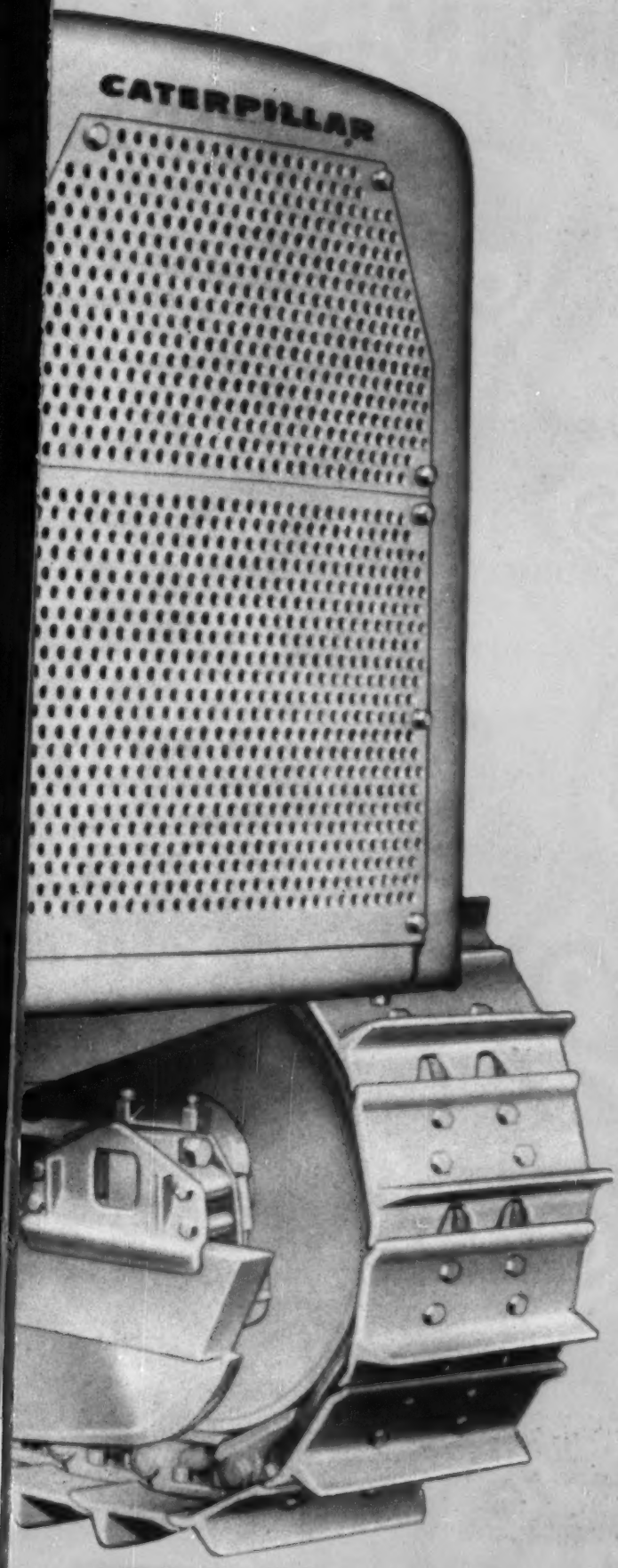
E. W. Carlton, professor of civil engineering, has been appointed chairman of the civil engineering department at the Missouri School of Mines and Metallurgy, Rolla, Mo.

A member of the faculty since 1923, Carlton has carried on extensive research and published numerous papers on highways and hydraulics.

He is past president of the Missouri Society of Professional Engineers,

(*Continued on page 97*)

E. W. Carlton



IT'S HERE ➧

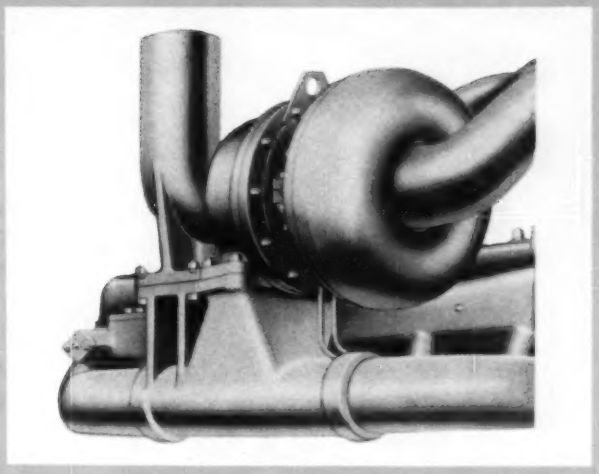
CATERPILLAR ANNOUNCES THE

D9

230 HP
(DRAWBAR)

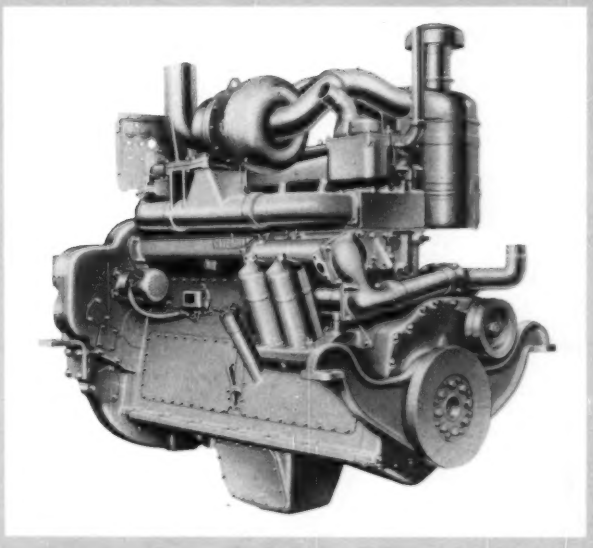
56,200 LB.

. . . Caterpillar Leadership in Action!



FIRST TRACK-TYPE TRACTOR WITH TURBOCHARGER!
The D9's new Turbocharger is driven by the engine exhaust, utilizing energy which would otherwise be lost. In addition, it packs air into the engine according to engine *load*, not speed. This means more working horsepower—greater performance.

CHOICE OF TORQUE CONVERTER OR DIRECT DRIVE!
Two types of drives are available, the exclusive Caterpillar oil clutch with six-speed (forward and reverse) transmission or a three-stage torque converter with 5:1 torque ratio. The transmission used with the torque converter has three speeds forward, two reverse. This option enables you to match the drive you want to your job requirements.



COMPLETELY NEW 286-HP ENGINE!
In addition to the Turbocharger, the powerful new D9 Engine features a 6¼" bore and 8" stroke and runs at 1200 r.p.m. Long life and dependability are promoted by stationary oil jet piston cooling; short, rigid valve push rods give smooth, accurate valve action; "Hi-Electro" hardened gear at the rear of the crankshaft drives timing gears and accessories; and many other advanced features.

WIDE RANGE OF OPERATING SPEEDS!

TORQUE CONVERTER:
3 speeds forward, 0 to 4.1 m.p.h., 0 to 5.7 m.p.h., 0 to 7.8 m.p.h.
2 speeds reverse, 0 to 4.1 m.p.h., 0 to 7.8 m.p.h.

DIRECT DRIVE:
6 speeds forward, 1.6, 2.1, 2.9, 3.9, 5.0, 6.8 m.p.h.
6 speeds reverse, same.

CONSTANT-POWER DRIVE FOR REAR-MOUNTED EQUIPMENT!
You always have power for cable controls, direct from the engine's rear power take-off. This makes cable control operation completely independent of flywheel clutch or torque converter and gives you a big boost in operating efficiency.

MEN AND JOBS

The D9...
proven in the field for a year!

Though new, the D9 is already a veteran. After exhaustive proving-ground tests, several D9s have been tested for over 19,128 hours on the toughest jobs in logging, construction, mining and quarry work. These jobs tested every square inch of this mighty new machine. The word from the field: "By far the best big tractor ever made."

Rugged—
and easy to service!

From its one-piece welded steering clutch case-frame assembly, to its track shoes hardened by the "Water Quench" process, the D9 is the toughest crawler built. And it's designed for easy servicing. Oil clutch, torque converter, transmission case and steering clutches can each be removed individually without disturbing other components. Hydraulic track adjusters are among the many other features for fast, easy adjustment and service work.

Easy to operate!

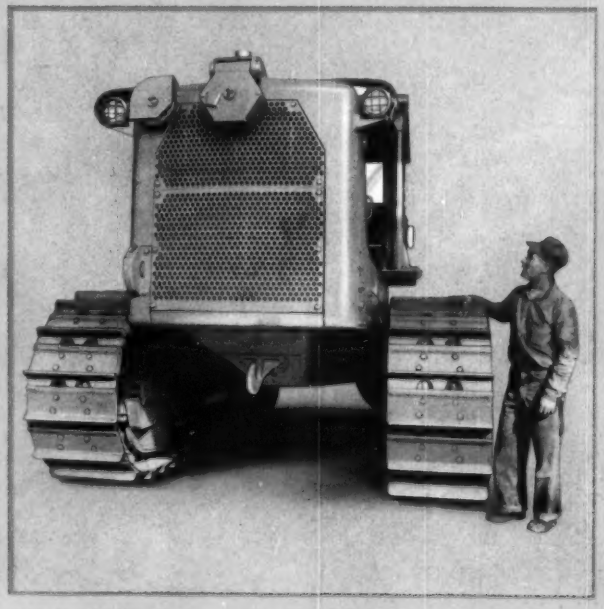
- The independent "live-shaft" drive for cable controls makes operation smoother, easier.
- Hydraulic boosters provide both power steering *and* power braking.
- Adjustable seat, all-around visibility, easy access to all controls make operator's job simpler.
- Important new 7-roller track frame improves stability, flotation and ride.
- New starting engine has electric starting system and simple single-lever control for easy operation from the seat and insures fast starts in all weather.

Equipment

New CAT*-built 'Dozers for the D9: the No. 9S Bulldozer, modified straight blade; the No. 9A Bulldozer, angling blade.

New Cat-built Cable Controls: the No. 29 rear-mounted, double drum; the No. 30 front-mounted, single drum.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



Brief specifications

Length: 17' 10¾"
Width: 9' 11¼"
Height: 8' 9"
Gauge: 90"
Weight: 54,000 lb. approx., dry
56,200 lb. approx., operating

MAIL TODAY!

CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

I'd like more information on the D9.

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

CATERPILLAR*

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THE D9...
NEW KING OF THE
CRAWLERS

PRINTED IN U. S. A.

chairman of the Young Engineers Committee of the National Society of Professional Engineers, and a member of the Board of directors of the American Society of Civil Engineers.

Standard Oil Affiliate Promotes C. E. Paules

Charles E. Paules, veteran petroleum engineer, has been appointed a vice president of Esso Research and Engineering Co., central research and engineering affiliate of Standard Oil Co.

A civil engineering graduate of Lehigh University and an officer in the Corps of Engineers in World War I, Paules joined the company in 1919 and until recently was its chief engineer. Since the end of the last war he has participated in the building of major oil installations in this country, England, Europe, South Africa and India.

S. G. Cohen, Army Engineer Retires From Active Duty

Sultan G. Cohen has retired from active duty with the Corps of Engineers in which he was commissioned during World War II. He plans to remain with the federal government in a civilian capacity.

At the time of his retirement, Col. Cohen was assistant district engineer of the Eastern Ocean District, which has large construction projects in the Arctic and subarctic regions under its supervision. His other assignments included engineering and construction work on the Ledo Road in India, Burma and China, as a member of General Pick's staff; and supervision of airbase construction in Labrador, Newfoundland, Greenland, Iceland,

S. G. Cohen

Saves 6 men, 4 tampers, 2 compressors and small dozer with one-man-operated "80-W"

VAN DOREN BROTHERS of Richmond, Virginia recently backfilled and compacted approximately two miles of trench, 2 feet wide and 4 feet deep, for a 6-inch gas line with just one man and one machine, a Cleveland "80-W" backfiller.

Before the Van Dorens purchased their "80-W" they used 7 men, a rubber-tired dozer, 2 compressors and 4 air-driven tampers for backfilling and compacting on jobs of similar size and type. The one-man-operated "80-W" did the complete job in less time than the 7-man crew formerly required on comparable jobs. "It's a great time saver," was F. M. Van Doren's comment on its performance.

On a previous job their Cleveland backfiller had saved them considerable time and money on a 12-inch water line trench, averaging approximately 6 feet deep, by its unique ability to backfill spoil deposited on a down slope on the far side of the trench, while simultaneously tamping it to the state of Virginia's rigid compaction specifications.

The "80-W" also does an outstanding job of side-crane work, lays pipe, pulls crossings, sets hydrants and valves, pulls sheathing, loads and unloads pipe, etc. Despite its ability to perform all these operations—and do an outstanding job on *each* of them—the "80-W" is easy to operate. The Van Dorens' operator learned to operate it with high efficiency after only two days training on the job.

Investigate this remarkable time, labor and machinery saving tool now—so that you, too, can realize its outstanding benefits on your next job.

Want more information on the "190"? See your Cleveland Distributor!

THE CLEVELAND TRENCHER COMPANY • 20100 St. Clair Ave., Cleveland 17, Ohio

CLEVELAND

Here's How Dry a WET JOB CAN BE!

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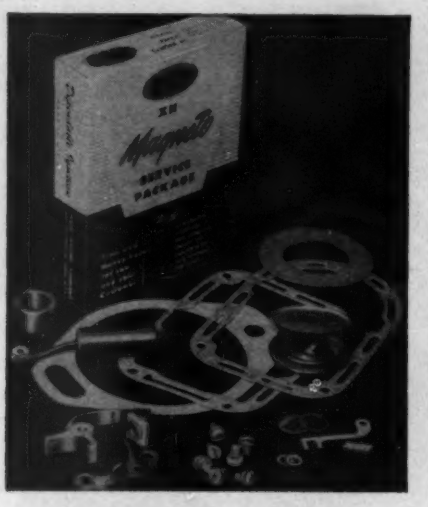


new WICO magneto overhaul packages speed ignition repairs

The essential parts for a thorough, long-lasting magneto overhaul are contained in Wico's new XH magneto overhaul package. When you use the complete package, you get a thorough magneto overhaul. All the necessary, factory-made parts for each repair are right at hand—in one package, under one number, at one price. Besides insuring better repairs, the package saves time spent looking for parts, looking up part numbers, figuring out prices. Time saved this way means your engine is back on the job fast, repair costs are lower, profits are up.

CONSTRUCTION EQUIPMENT ignition repairs last longer when a Wico XH magneto overhaul package is used. Package contains all necessary XH magneto parts for thorough, long-lasting repairs: condenser and contact set, gaskets, screws, breaker arm lock, oil seal, slinger, bushing.
ORDER PKG. NO. K-9358.

WICO
WICO ELECTRIC
Box 955 West Springfield, Mass.
Gentlemen:
I can use XH Magneto Overhaul Package No. K9358. Rush me name of distributor nearest me.
NAME .....
COMPANY .....
ADDRESS .....

the Azores and Bermuda, as chief of operations for the East Ocean Division and later as district engineer of the Northeast District.

Col. Cohen is a civil engineering graduate of Purdue University and was engaged in engineering and construction work in Kansas and Indiana before starting his military career.

Turner Construction Co. Names Research Director

The Turner Construction Company, New York City, has appointed Godfrey Lutz as director of construction research.

Lutz obtained his degree in civil engineering at the Swiss Federal Institute of Technology, Zurich, Switzerland, and supervised the design and construction of many projects in Germany and Austria before joining Turner in 1933.

His earlier experience in this country included the designing of highway structures for the Wyoming State Highway Department and structural design work for the Portland Cement Co. in Denver, Colo.

Philadelphia Firm Elects Levonian Vice President

Hilton A. Levonian has been appointed a vice president of the Kuljian Corporation, engineers and constructors. He will be in charge of consulting engineering with headquarters in the firm's main office in Philadelphia.

A graduate of Drexel Institute, Levonian has been with The Kuljian Corporation since 1947, serving as design engineer on electrical projects.

H. A. Levonian

New York Building Congress Elects Hennessy President

John F, Hennessy, of the New York consulting engineering firm of Syska & Hennessy, Inc., was elected president of the New York Building Congress, Inc. at the association's 34th annual meeting last week.

A graduate of Massachusetts Institute of Technology, Hennessy has been associated with the engineering aspects of building construction for over 30 years. He has been particularly interested in the unique problems presented by advanced architectural design. One of the firm's current projects is the new Air Force Academy.

Engineering Firm Gives Itself a New Name

The New York firm of consulting engineers, long been known as Knappen - Tippetts - Abbett - McCarthy, has changed its name to Tippetts-Abbett-McCarthy-Stratton. Present partners are Ernest F. Tippetts, Robert W. Abbett, Gerald T. McCarthy, James H. Stratton and William Z. Lidicker.

At the same time the following were admitted to the firm as associate partners: Frank Lilien, Leonard A. Lovell, Thomas J. Fratar, Walter Prokosch and Barnett Silveston.

Men and Jobs Briefs . . .

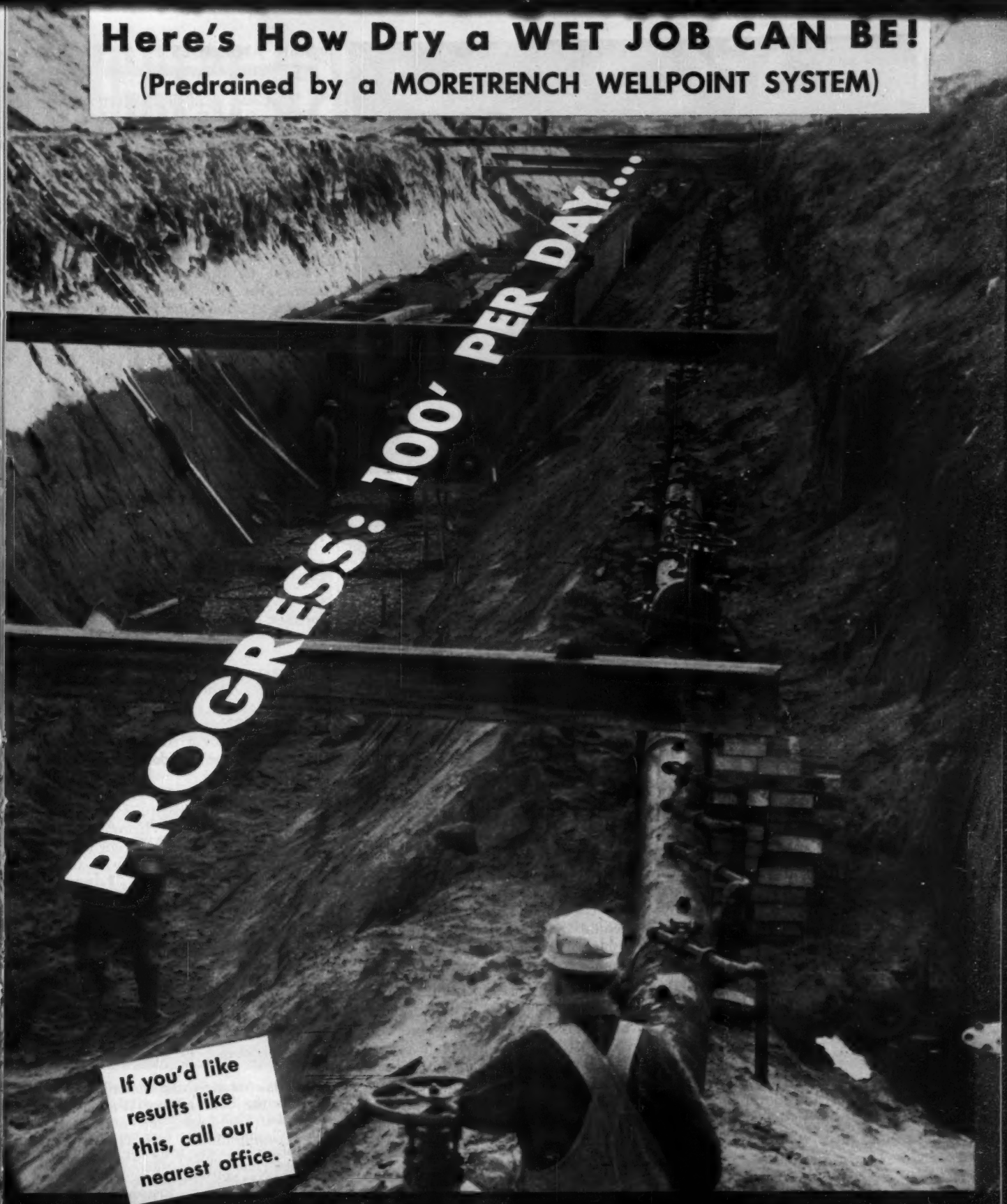
• **Corps of Engineers**—**Col. Henry J. Hoeffer** is assigned as Sixth Army Engineer in San Francisco, succeeding **Col. A. G. Kirchhoff**, transferred to Ft. Belovir, Va. Recently stationed in Yokahoma as commanding officer of the engineer depot, Col. Hoeffer served with the Air Corps in World War II as engineer in charge of airfield construction in North Africa.

• **Associations**—The Arizona Sewage and Water Works Association elects **Ted Rekerdre** president . . . **Harvey F. Pierce**, partner in Maurice Connell & Associates, Miami, heads up the Florida Engineering Society . . . **William R. Ganser, Jr.**, specialist on engineered timber construction, is appointed research engineer for Timber Engineering Co., research affiliate of National Lumber Manufacturers Association.

Thomas L. Amis, president of Wamix, Inc., Dallas concrete producer, becomes president of Texas Ready Mixed Concrete Association . . . **S. D. C. Chutter**, of Ottawa and Vancouver, is named general manager of Canadian Construction Association, Ottawa, succeeding **R. G. Johnson** . . . **Warren**

Here's How Dry a WET JOB CAN BE!

(Predrained by a MORETRENCH WELLPOINT SYSTEM)



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To help you hole-thru faster...

COMMERCIAL liner plates speed up mining in soft ground tunneling

Working many feet underground in the heading of a soft ground tunnel, this crew is unconcerned about the possible danger which could result from a cave-in. By installing the COMMERCIAL steel liner plate system of ground support, the contractor of this job is providing the best safety insurance for his men as well as assurance for himself that his job can be completed on schedule.

When you realize that the COMMERCIAL plates have continuous inward flanges with all four corners solid, it is easy to understand why they are so strong and will support such heavy loads. No one wants to take a chance of loosing a heading because of inadequate ground support. A lost heading, like a lost week-end, costs money and takes time to recover from.

Look how close to pay line these "sand hogs" mine. Just a few more spadefuls of dirt need to be removed before one of them will slap the next plate into place while the other will slip seven bolts thru matching holes in the flanges and quickly tighten up the nuts with a rachet. Bolt in one hand, nut in the other, two inside vertical flanges between with matching holes—everything out in the open—what could be quicker or more simple?

As all flange joints are butt to butt and plates are curved to the exact required radius, there's no over-mining beyond pay line to cause voids behind the plates. Thus ground ravelling is minimized and reduction of the amount of grouting behind the steel lining, if any, becomes a very substantial cost-saving item.

Our experience, from many years work with engineers and contractors who have successfully used the COMMERCIAL liner plate system in hundreds of different soft ground tunnels, can be a great help to give you the footage and safety needed to complete your tunnel on schedule. There will be no obligation.

"COMMERCIAL"
PRODUCTS PREFERRED BY CUSTOMER ACCEPTANCE

THE COMMERCIAL SHEARING AND STAMPING COMPANY
Youngstown, Ohio · Chicago, Illinois · Salt Lake City, Utah

LA-12

MEN AND JOBS

L. McCabe, dean of Polytechnic Institute of Brooklyn, is named to the presidency of the Association of Engineering Colleges of New York State.

• **Careers**—Kentucky's chief highway engineer, **Dwight H. Bray,** goes to Peru on a special six-weeks assignment for the International Bank for Reconstruction and Development . . . **Dwight C. Brown,** of Topeka, becomes the new state architect for Kansas . . . **Raymond F. Campbell** is appointed engineer in charge of District 10, Pennsylvania Department of Highways . . . New York State Department of Public Works sets up a Division of Architecture, operating with four districts and headed up by state architect **C. J. White.**

• **Business**—The Lummus Co., New York engineers and constructors for the petroleum and chemical industries, elects **James H. Curtis** as vice president . . . **Harry E. Crossley** leaves the Salem Steel Co., Winston-Salem, N. C., to enter the consulting engineering field . . . **Joseph C. Weaver** is named president, and **Harry T. Immerman** and **Robert White** become vice presidents, of Spencer, White & Prentis, Inc., foundation and underpinning specialists in New York and Canada . . . **Thornton R. Smith** becomes secretary of Kuhn, Smith & Harris, Inc., New York building contractors, succeeding **Archibald Kuhn,** advanced to vice president.

• **Retirements**—**John H. Obermuller,** assistant planning engineer for the California Division of Highways, retires after nearly 50 years of engineering work, 10 of which were with the Bureau of Public Roads . . . **Edward H. West** leaves the Louisville, Ky., Metropolitan Sewer District.

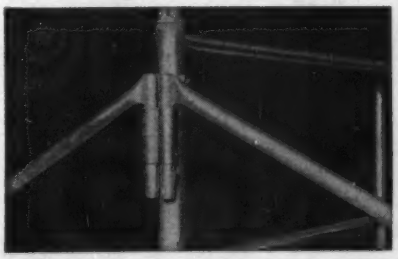
• **Education**—**J. W. Huber,** head of the department of civil engineering at Washington University, St. Louis, Mo., leaves the university next month to become consulting engineer with Macomber Inc., steel fabricators in Canton, Ohio.

• **Honors**—Among those honored this week by the University of Wisconsin College of Engineering for "outstanding accomplishments" is **Henry J. Hunt,** vice president of Mead and Hunt, Inc., consulting engineers in Madison, Wisc. . . . **Joseph G. Barstow,** chief engineer and assistant manager of the Port of Oakland, Calif., receives the distinguished city service award of the Oakland Junior Chamber of Commerce.

BIGGEST NEWS IN SCAFFOLD HISTORY

NOW—FOR THE FIRST TIME—EVERY PANEL, EVERY BRACE, EVERY SINGLE COMPONENT PART OF UNIVERSAL SCAFFOLDING

No More Pitting—Gone are the curses of rust-pits that eat into scaffold steel. Construction men and mason contractors well know how these rusted, rough surfaces slow down erecting and dismantling. Now, Universal's protecting galvanized surface assures faster operations and lowers maintenance costs.



Rust-Free, Lubricated Surfaces—The smooth surface that galvanizing provides, acts as a lubricant when fitting braces and connections. Further, mortar won't cling as readily to cleaner-surface zinc galvanizing—and your Universal Scaffold will constantly work better to give you more job profits.

Send for free Literature on:
EZEBILT & LADSCAF Panel Scaffolding
AMERICAN-TUBULAR Elevating Towers
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THE MOST WANTED IMPROVEMENT IN THE INDUSTRY! LUBRICATING GALVANIZED SURFACE, THAT PROTECTS AGAINST RUST, SPEEDS UP ALL YOUR SCAFFOLD WORK.

Here, at last, is the wonderful result of long experimental research, to bring to scaffold users all the benefits of zinc galvanizing—at no increase in cost. Universal Manufacturing Corporation, world's largest producer of steel-panel scaffolding, is now applying on every single component of Universal Scaffolding, a perfected zinc-galvanizing that provides a clean, smooth, rust-preventive and lubricative surface.

At last, RUST, the age-old curse of the scaffold business is satisfactorily disposed of—once and for all.

The harmful effects of rust and corroded rough surfaces will no longer slow down your scaffold erection and dismantling. And, you can count on substantial reductions in the costly recurring expenses of maintaining and reconditioning your scaffold. Your scaffolding will work faster, look better on the job, and last longer. This important new development means that where profits depend on fast, efficient scaffolding, ***you can now count on more profits.***

We welcome inquiries from scaffold users in sea-water coastal areas, or in chemical installations, where corrosion is an important consideration.

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Another "FIRST" by the Pioneers of the Only Automatic-Locking Brace—"Gravity-Lock"

UNIVERSAL MANUFACTURING CORP.

"World's Largest Producer of Steel-Panel Scaffolding"

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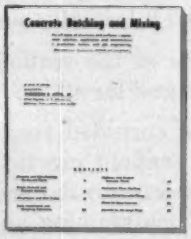
2 NEW BOOKS

bring you profitable ideas for producing concrete

44-page educational text-book catalog, illustrated by 90 photographs, diagrams and charts, covers all phases of concrete plant operation. It shows typical plant sites ● takes you on a "tour" through 8 different types of plants ● explains latest developments in plant automation. Comprehensive bin-selection guide gives complete data on bin capacities ● ground-space requirements ● heights ● charging systems. Other sections discuss batching ● cement storage ● aggregate-handling equipment.

Concrete batching and mixing



Here is another technical book — on producing concrete for all types of surfaces and structures. It's reprinted from a series of recent nationally-published articles on equipment application, maintenance, production factors, and job engineering.

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Send us: ☐ 44-page catalog on Concrete Plants. ☐ Reprint book on Batching and Mixing.

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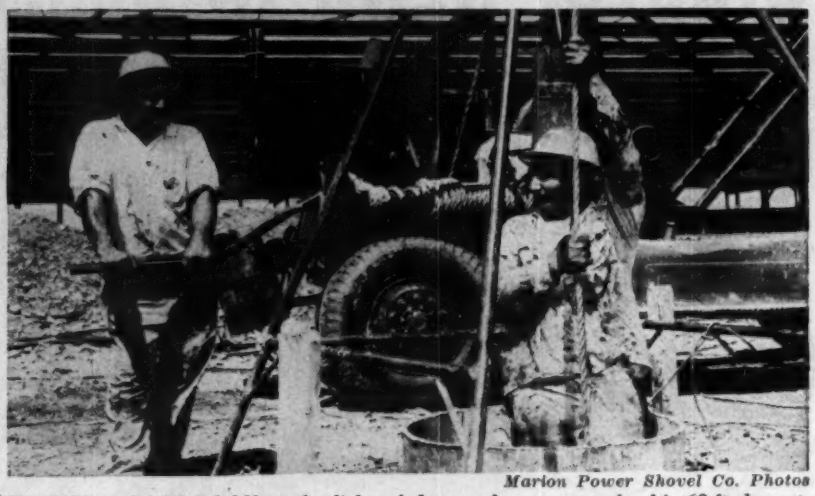
FIELD AND OFFICE



Marion Power Shovel Co. Photos

TAKING A LAST LOOK at the light of day, worker prepares for his 69-ft descent.

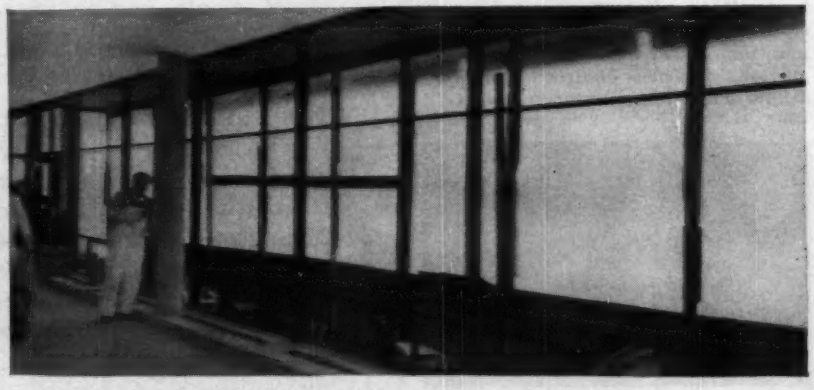
Trio Bells Shafts at 69-ft Depth

Three employees of the A. H. Beck Foundation Co., San Antonio, Tex. have really earned for themselves the title of "Human Groundhogs." Working under millions of tons of earth, the threesome belled out the bottoms of 742 shafts which when filled with reinforced concrete will support a new $12½ million B-36 maintenance hangar at the Kelly AFB in Texas.

Armed with an air hammer, one of the men was lowered to the bottom of one of the 69-ft. holes where he increased the diameter of 18-in. shafts to 2½ ft and the diameter of 5-ft shafts to 11 ft. His partner on the surface would periodically lower a bucket to be filled with the excavated blue shale.

Light was supplied by drop cords and the "Groundhog's" air supply was provided by exhaust from the chipping hammer. Digging each bell required about 2½ hours.

The technique is not brand new (ENR April 16, 1953, p. 48), but this is the first time that foundation shafts



Film Permits Comfortable Winter Work

Plastic film permitted uninterrupted work on the Sharon Central School, Sharon, Conn. through last winter. Attached to the outer scaffolding by nails and boards, the polyethylene sheeting converted the otherwise open structure into a comfortable place to work even though outside temperatures were well down and wind velocity was at times 65 mph. The film helped hold in heat from gasoline-burning hot air heaters, permitting brick to be laid even when it was snowing outside. Translucent, the film eliminated the need for artificial lighting in outside rooms, and, on milder winter days, sunlight produced enough heat so that the hot air stoves were not necessary. As outer walls were completed, the film was removed from the scaffolding and stapled to large wooden frames which were fastened in the window frames. John C. Smith, Inc., of New Canaan, Conn., was the contractor.

Never a Better Reason for Switching to Copyflex...

NEW COPYFLEX MODEL 500

Here it is! The faster, easier-to-use, heavy-volume Copyflex reproduction machine that sells for the low price of $3,250.00 f.o.b. Chicago. It's your best reason ever for joining the switch to Copyflex!

NEW! Larger front tray takes prints up to 24" x 32". Larger rear tray takes sizes up to 30" x 42". Extra-roomy tracing tray handles originals up to 12". Special tracing stacker, variable front print stacker, and print roll-up attachment are available at extra cost.

NEW! Model 500 gives fast, 40 f.p.m. speed. Its 4,000-watt quartz lamp and synchronized exposure and developer units assure clear, high contrast prints.

NEW! Patented air-jet separator provides reliable automatic separation of tracings from exposed sheets.

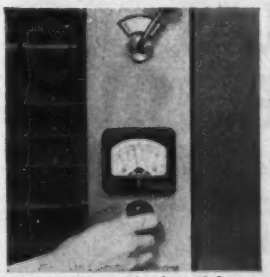
NEW! The electrical control system is free from vacuum tubes, a common source of trouble in most other reproduction machines. It uses such devices as 100,000-hour-life rated selenium rectifiers and variable transformers to assure efficient, trouble-free operation.

PLUS Model 500 is free from fumes, requires no venting or plumbing. It offers such Copyflex extras as exclusive vacuum feed, adjustable light shield, and special feed release treadle.

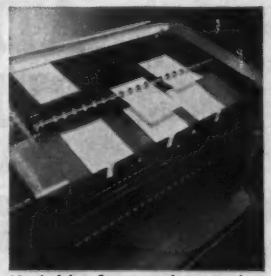
Never has any reproduction machine offered so much. Never have you had a better reason for trading in that old machine and joining the switch to Copyflex. Mail coupon today.

ANY WAY YOU LOOK AT IT, THE NEW MODEL 500 IS YOUR BEST BUY TODAY!

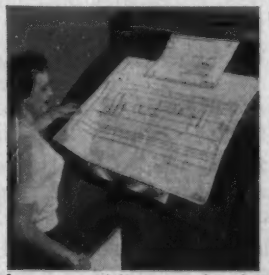
BRUNING
Best Process! Best Machines! Best Selection of Materials! **Copyflex**



Model 500 provides fast 40 f.p.m. speed and 46-inch printing width for heavy-volume reproduction. New type indicator shows actual speed.



Variable front print stacker (optional) can be set quickly by control knob to provide positive stacking for prints from 6" to 24".



Larger rear delivery tray handles up to 30" x 42" prints. Movable magnetic stops provide variable stacking.

Charles Bruning Company, Inc., Dept. 1710
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Please send me information on the new Copyflex Model 500.

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new!

ATLAS *Shotmaster* BLASTING MACHINE

The first condenser discharge type blasting machine utilizing a high voltage DC generator directly connected to charge the condensers.

Dependable blasting starts with a dependable blasting machine. And this new Atlas blasting machine is designed to give you every advantage in dependability and safety.

Hand actuated generator operation does away with battery replacements and gives consistent voltage in both hot and cold weather.

Built-in Volt Meter shows actual voltage while the condensers are being charged.

Adequate voltage assured. The condensers cannot discharge into the firing circuit below a predetermined voltage.

No danger of a residual charge in the condensers. With the condensers connected directly to the generator, any residual charge is dissipated quickly.

Simplified operation. The generator is hand operated. The firing trigger may be closed or open during the voltage build-up. Only when the voltmeter needle indicates optimum power can the firing circuit be activated.

Waterproof. The entire unit is sealed and the switch is waterproof. The new Atlas blasting machine is always ready to go . . . under all conditions.

Sturdy, welded steel case is compact and easy to handle. The whole machine weighs only 30 lbs.

Insulated-type terminals. Binding post screws are made of a non-conducting material. Terminals are well separated for maximum safety.

For complete information on this new blasting machine, get in touch with your Atlas representative. He will be glad to give you full details and arrange a demonstration if you wish.

ATLAS

ATLAS EXPLOSIVES

"Everything for Blasting"

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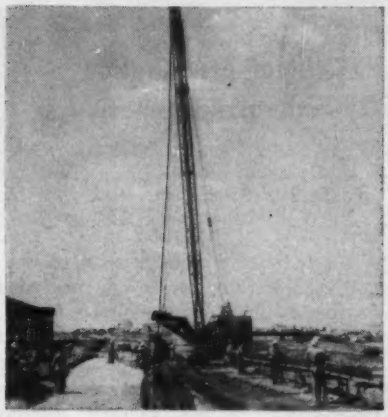
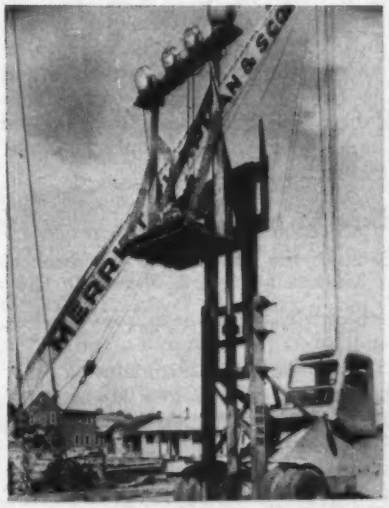


CONTRACTOR converted power shovel into drill rig for boring the 69-ft shafts.

have been belled at such a depth in quantity. The deepest shafts belled by the Beck Company have gone down 86 ft.

The shafts were dug by one of the contracting company's excavator cranes converted into a gigantic post-hole driller. It is equipped with a crowding mechanism less the shovel boom and handles. The rotary drill on the platform is driven by a chain from the crowd mechanism. With the rig, hole diameters can range up to 10 ft, depths to 150 ft.



Pallet-Mounted Light Tower Is Supported by Ford Truck

This portable light tower was built by the Connecticut Terminal Company, Inc., New London, Conn., for night work in its materials storage yard. The tower is mounted on a pallet and transported by fork truck. At work site tower is usually set on ground, but it can be supported by the truck at high level if broad illumination is necessary.

Gurley ***Current Meters for measuring stream velocity in:***

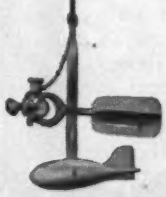
Fresh water—rivers, streams, canals, lakes

Salt or brackish water—with a newly-designed salt water model

Shallow or sluggish streams—with the Pygmy Current Meter

Industrial waste and sewage—where solids permit ...the Gurley Current Meter is made of non-corroding materials.

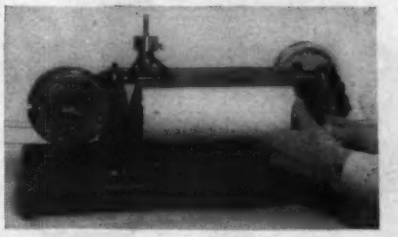
Gurley Current Meters have been the standard of the profession since 1870. Highly-standardized, easily-disassembled for cleaning... simple, precise and rugged. Write for "Gurley Current Meters" (Bulletin No. 700).



Gurley Graphic Water Level Recorders

Continuous record on graph chart for 24 hours or 8 days. Positive response to fluctuation by float, perforated tape and sprocket wheel. Finest quality "Chelsea" marine clock. Metal base and cover. Made of non-corrosive materials throughout. Ranges 1 to 40 ft., or 30 cm. to 12 meters.

Use Gurley Graphic Water Level Recorders when you need dependable records of reservoirs, hydro plants, sewers and sewage systems, irrigation and stream gaging. *Write for Bulletin No. 50 and details on Gurley Water Level Recorders.*



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TROY, N. Y.

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• SCREENLESS
• RUGGEDLY BUILT
• NON-CLOG IMPELLER

THE ECONOMICAL SEWAGE PUMP with the *NON-CLOG impeller!*

This WEIL Screenless Heavy Duty Non-Clogging Sewage Ejector is ruggedly built for years of trouble-free operation. WEIL Pumps of this design are still operating satisfactorily after 25 years of service.

This unit is completely factory assembled, economical to install — only one piping connection is required. Pre-assembly and factory testing insure LESS installation time and no "call-back" servicing.

Inherent in the design of this pump is an ample reserve of strength to meet the most severe conditions. The ease and simplicity of installation and the record of many years of trouble-free operation make this pump the logical choice with the engineer, contractor and owner.

Fig. C-9001

This Two Blade NON-CLOG Impeller is the most important part of the screenless non-clog sewage pump. Not only does it effectively handle large diameter solids but it also passes rags and stringy material of various lengths which are washed into the sewage pit. Pumps with this impeller successfully handle difficult pumping jobs such as waste from public toilets, canning plants, hospitals and industrial installations.

Fig. C-9021

This rugged pump casing with wide waterways permits unobstructed passage of the maximum solids handled by a non-clog impeller.

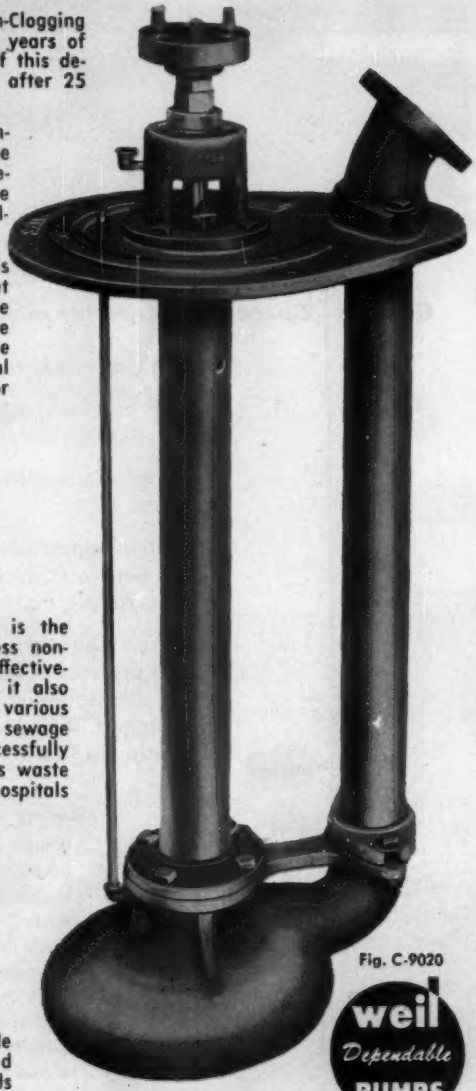

Fig. C-9020

weil Dependable PUMPS

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weil PUMP CO.

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BOOKS

A Critical Examination Of Federal Reclamation

WHAT PRICE FEDERAL RECLAMATION?—By Raymond Moley. 72 pp. American Enterprise Association, 1012 14th St., N. W., Washington 5, D. C. $1.00.

An extremely critical essay on federal reclamation policies is presented in this booklet by Raymond Moley, author, professor and a member of the Roosevelt Administration in its earliest days. Moley's apparently well-documented attack centers around financial affairs, particularly the several devices used to justify costly irrigation projects and the long-established concept of repayment of irrigation costs without interest. Moley points out that the long repayment periods result in extremely high interest charges that are borne by all U. S. taxpayers without corresponding benefits.

Mr. Moley also contends that more farmlands are not needed in this country. And if they are, cheaper development could be had by providing supplemental water for areas in the humid south as compared with new undertakings in the arid west.

Concerning the Upper Colorado River Project now before Congress, Mr. Moley estimates that under the proposed plan for financing that project "the concealed subsidy to be paid by the nation's taxpayers would be between three and four billion dollars," and that the subsidy to the lands to be irrigated would be about $4,000 an acre.

How to Move Earth

MOVING THE EARTH: The Workbook of Excavation—By H. L. Nichols, Jr. 1,280 pp. North Castle Books, 212 Bedford Road, Greenwich, Conn. $15.00

This big book contains a vast amount of information about earth moving and many related operations. It even has a section on setting slope stakes and grade stakes that will be found helpful by young engineers. Land clearing also is well covered.

Part one takes up the many common grading operations such as cellar excavation, land drainage, ditching and fill construction. It accounts for somewhat less than half the book, including a chapter on the cost of owning and operating construction equipment under the title of "Making and Losing Money."

The remainder of the book is given over to the machines used in all types of earth and rock-moving opera-

BUTLER die forms every piece... and *bolts it tight for keeps*

If you think steel buildings are all alike—we suggest you examine a Butler steel building. A Butler has the good looks and weather-proof permanence for stores and office—at a cost low enough for warehouses! Precision manufacture makes the *big* difference. Every cover panel is die-formed—not hacked out of standard corrugated sheets. That means one-piece corners, one-piece roof ridge, rigid curved eaves, mitered wall-roof joints, weathersealed windows, doors and foundation joints.

Every piece is bolted on with special Butler bolts. Nothing holds like a bolt, yet makes it so easy to change your mind. Butler bolts seal each piece into a structure practically as tight and permanent as a one-piece steel shell! No nails, no hooks, no makeshift field tailoring. A Butler steel building goes up for *keeps*—and maintenance is almost nil.

Every bolt has a lifetime cushion. Neoprene washers cushion bolts—last indefinitely. Give and take with temperature changes—keep every panel sealed weathertight!

Butler bolts just don't rust. Bolts are zinc-coated—then "Iridite" coated. "Iridite" preserves galvanizing, prevents galvanic damage to metals.

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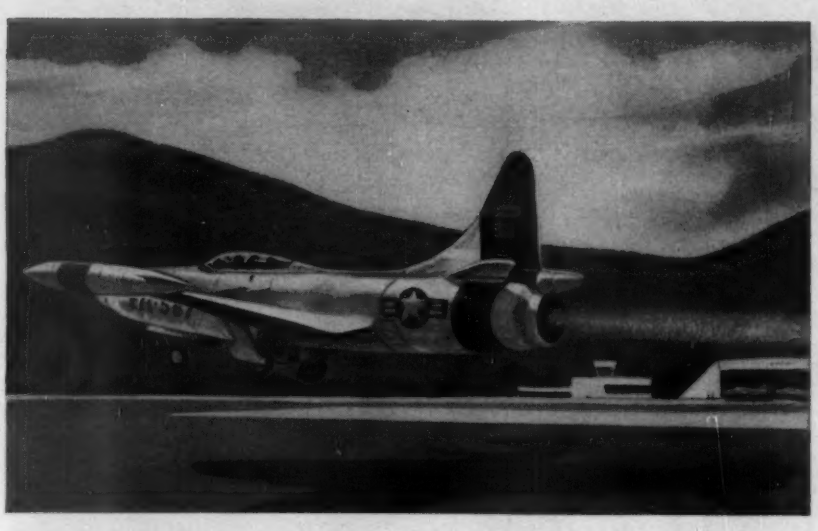

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...with these FLINTKOTE Products!

Provide resistance to fuels, oils, greases in critical areas. When it's time to scramble, have pavements ready!

FLINTBINDER* C-2 . . . a specially compounded hot-mix tar-rubber binder for jet fuel resistant flexible pavement. Used as surface course or overlay on asphaltic or portland cement concrete. (Meets Corps of Engr.'s specification for tar-rubber binder).

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Flintbinder C-2 jet fuel resistant pavement being laid on one of many large U. S. Air Force Bases.

FLINTAR† . . . specially compounded coal tar emulsion for surface sealing asphalt pavements on service areas subjected to jet engine fuels, oils, greases and engine cleaning compounds. Squeegeed on surface, it increases pavement life. (Meets Fed. Spec. R-P-00355.)

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tions. Each principal type is described in considerable detail. Drawing and lettered photographs are used extensively to supplement this descriptive material. Included is information about the operating characteristics of each major type to help the reader in determining what type of equipment is best suited for his particular job. Also there is much general information on engines, brakes, clutches and transmissions.

A large glossary of terms used commonly in the earthmoving field will be found helpful by beginners.

New Engineering Books

THE TESTING AND INSPECTION OF ENGINEERING MATERIALS—Second Edition. By Davis, Troxell, & Wiskocil, 431 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.50

AUTOMOTIVE ENGINES: CONSTRUCTION, OPERATION AND MAINTENANCE — By William H. Crouse, 518 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.50

AUTOMOTIVE FUEL, LUBRICATING AND COOLING SYSTEMS—By William H. Crouse, 421 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $5.75

GEOLOGY IN ENGINEERING—By Schultz & Cleaves, 592 pp. John Wiley & Sons, 440 Fourth Avenue, New York 16, N. Y. $8.75

THE STRAIN GAGE PRIMER—By Perry & Lissner, 281 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.00

PLANT AND PROCESS VENTILATION—By W. C. L. Hemeon, 437 pp. The Industrial Press, 93 Worth St., New York 13, N. Y. $9.00

WATER SUPPLY ENGINEERING—Fifth Edition. By Babbitt & Doland, 608 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $8.50

PROFESSIONAL ENGINEERING REGISTRATION LAWS: A Compendium—By Alfred L. McCawley, 614 pp. Order from A. L. McCauley, Trustee Publications Fund, Box 474, Jefferson City, Mo. $8.75

WHY NOT SURVIVE?—By Michael W. Straus, 272 pp. Simon and Schuster, Rockefeller Center, New York, N. Y. $4.00

INTRODUCTION TO LABOR ECONOMICS—By Orme W. Phelps, 554 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.50

PRACTICAL PLANT LAYOUT—By Richard Muther, 363 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $12.00

(*Continued on page 112*)

EXTRA **Mobile Equipment News** EXTRA

VOL.2 — VICKERS INCORPORATED, DETROIT, MICHIGAN — NO.6

NEW—For Smaller Vehicles

VICKERS® HYDRAULIC POWER STEERING

LOW COST

Vickers Series S22 is a new, streamlined steering booster built especially for smaller vehicles. The design permits high production economies . . . and these economies are passed on to vehicle manufacturers.

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The Series S22 has excellent operating characteristics . . . providing smooth, easy, fingertouch steering under all conditions. Obstructions, chuck holes, blown tires, etc. cannot spin the steering wheel or jerk it out of control on vehicles equipped with this Booster. Safer in traffic . . . on the farm . . . in the plant.

SIMPLIFIED DESIGN

Servo valve is simplified and smaller. Ease of servicing is another advantage.

EASY INSTALLATION

Oil connections can be placed in any one of four positions (90° apart) with respect to ball stud. This and the compact design make installation exceptionally easy and reduce its cost.

NEEDS LESS SPACE

Design is unusually compact and streamlined. Series S22 will go into a minimum space and usually requires little or no linkage change.

DEPENDABLE

All the "know-how" acquired in Vickers more than 25 years experience with hydraulic power steering has gone into the design and manufacture of the Series S22. Vickers hydraulic equipment of all kinds has a remarkable record of dependability. This booster is no exception.

ASK FOR NEW BULLETIN

A new bulletin gives more information on the Series S22 together with appropriate Vickers Pumps and typical circuit diagrams. Send for Bulletin M-5107.

For heavier steering applications and longer piston strokes, use Vickers Booster Series S23 (see Bulletin M-5106) or Model S6-315 (see Catalog No. M-5101).

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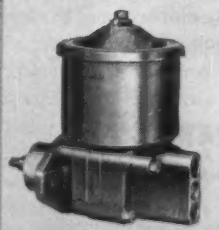
VICKERS SERIES VT16 VANE TYPE PUMP



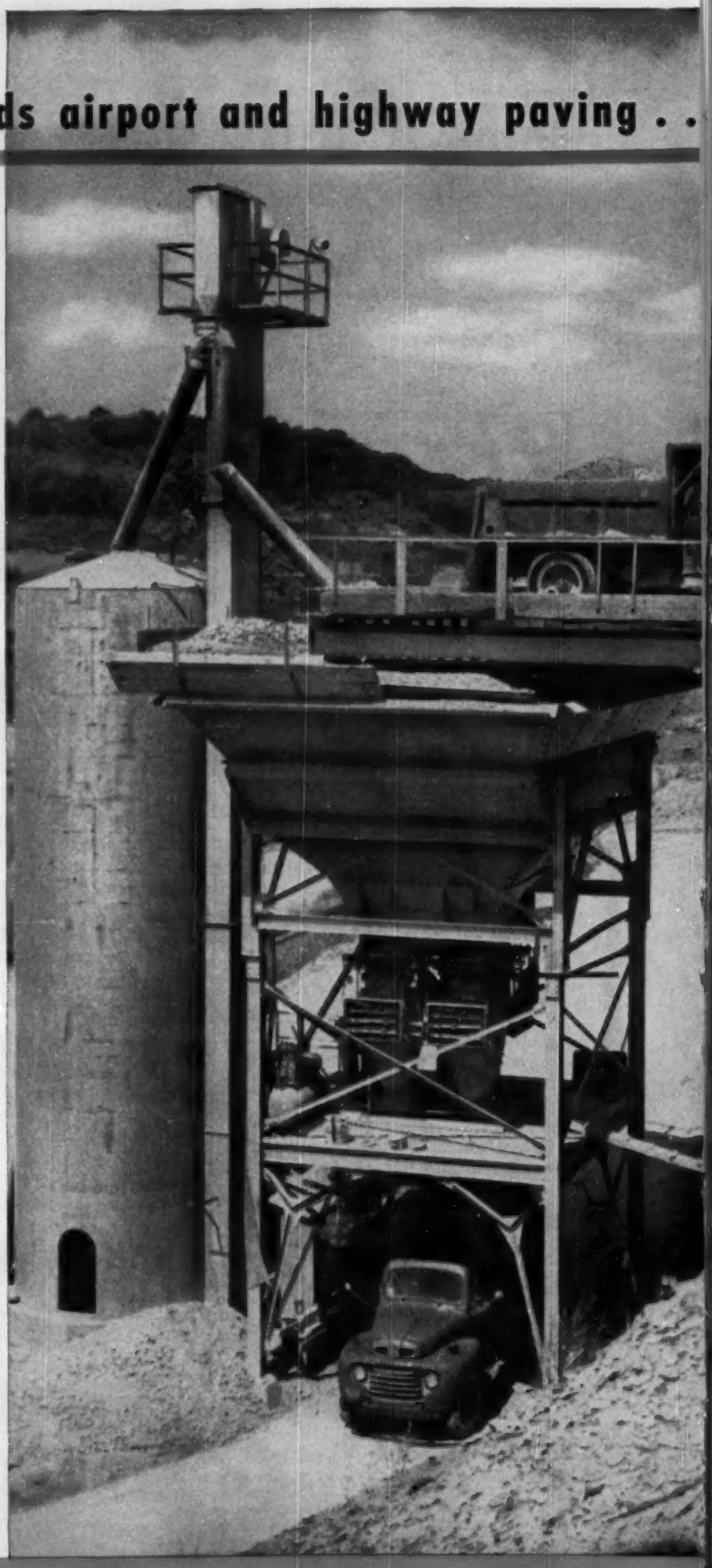
This is the pump normally used with the Series S22 Booster. It has integral volume control and relief valve, and oil reservoir. The vane type design delivers more oil with less power. Automatic wear compensation and hydraulic balance contribute to much longer life with minimum maintenance. No-load starting is another advantage in cold weather.

7179

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

21-SECOND batch time

speeds airport and highway paving . .



Johnson Automatic Batch Plants, like the one shown here, accurately weigh out aggregates and cement ahead of heaviest paving schedules on highways, airports, and other large-volume concrete jobs. For example:

Keeps two 34-E pavers busy . . . One plant, with one batcher operator, easily supplies enough materials to keep two 34-E pavers busy full time. A 1¼-cu. yd. batch is weighed up, and discharged into truck, in as little as 21 seconds. One-stop charging of batch trucks speeds production. (Plant also can be arranged for two-stop charging.)

Automatic control maintains high plant output all day . . . assures pin-point weighing accuracy of every batch. A separate, fully-automatic weigh-batcher is used for each of the aggregates, and for the cement. All materials weigh up at the same time for greatest speed. These single-material Johnson batchers operate on electro-pneumatic control . . . fill valves and discharge gates are automatic air-ram operated.

Multiple batch selections . . . For road-builder's use, dial scale with electric cut-off switch is usually used. When more than one batch size is required, single material batchers can be equipped with mix selector for 12 different mixes . . . all controlled from central operator's station. (Each of the single-material aggregate batchers can be equipped with a moisture compensating lever which automatically gives a dry weight of material being weighed.) Up to 120 mix selections are available on large Johnson batch plants for dams, and commercial ready-mix installations.

Investigate the possibilities of increasing concrete production on your operations with one of these Johnson Automatic Batch Plants. In many instances this equipment can be added to an existing plant. For complete details, contact your Johnson distributor, or write to us.

C. S. JOHNSON COMPANY

CHAMPAIGN, ILL. • *(Koehring Subsidiary)*

JOHNSON *automatic* BATCH PLANTS

CJ414

Main units in this Johnson Automatic Batch Plant consist of: 150-cu. yd. square bin, with 3 aggregate compartments, and a 150-bbl. central cement compartment. Three 2000-lb. automatic single-material aggregate batchers . . . one 1000-lb. automatic cement batcher. Truck-receiving hopper, bucket elevator and 757-bbl. aerated silo for cement. Hillside ramp permits convenient truck delivery of aggregates to top of bin.

BINS • BATCHERS • HOPPERS
SILOS • ELEVATORS • CHARGERS
CLAMSHELL, CONCRETE-BUCKETS

25-foot-per-minute Parsons 150 Trenchliner®

On drainage, irrigation and utility trenching, 150 wheel-type Trenchliner digs 16 to 26 inches wide, at depths to 5¾ feet. Hydraulic wheel-hoist maintains close grade tolerance. 30 digging feeds range from 12 inches to 25 feet per minute. Has square or round-bottom buckets; gumbo lips or "Tap-In" teeth; 16 or 12-inch crawlers; gas or diesel power. Tile box and chute optional. Parsons line includes 5 other models, all sizes and types.

PARSONS • Newton, Iowa
(Koehring Subsidiary)

Kwik-Mix Moto-Bug® has ¾-ton capacity

Moto-Bug power wheelbarrow hauls 10 cu. ft. (or 1500 lbs.) of any bulk materials. Has instant gravity-dump, with snub-line control. Climbs 20% ramps or grades. There's full power forward and reverse . . . and safe, automatic brake control. Hopper is interchangeable with 1500-lb. platform, or ½-ton (6-ft.) fork lift. For your heavier work, a larger size Moto-Bug is also available with big-capacity hopper, platform and fork lift.

KWIK-MIX • Milwaukee, Wis.
(Koehring Subsidiary)

Save turn-time with Koehring Dumptor®

Fast-shuttling Koehring Dumptor® eliminates slow turns at loader, on narrow haul roads, and at the dumping location. With constant-mesh transmission, Dumptor travels same speeds forward and reverse . . . gets its load, drives to fill, dumps and returns to loading unit without turning. Eliminating only 2 turns saves ½ minute on every cycle. Instant gravity dump cuts another 15 to 25 seconds off haul cycles with heavy-duty Dumptors.

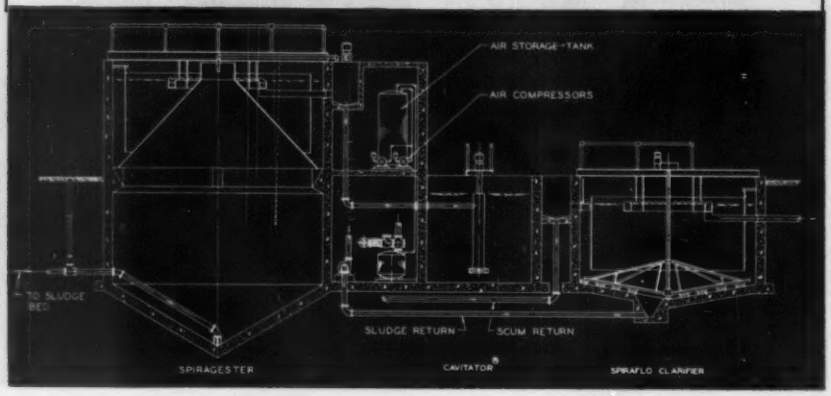
KOEHRING Company
Milwaukee 16, Wis.

T66

YEOMANS presents

THE Cavitator* SYSTEM

for Municipal Waste Treatment



One of the many possible arrangements is illustrated. The secondary treatment is provided by the Cavitator mechanism, a specially designed rotor with two arms mounted on a hollow shaft through which air is drawn for dispersion through the tank contents. The arms are streamlined with the outer ends so constructed that when they are passed through the liquid at relatively high speeds they create a zone of cavitation through which the liquid is recirculated continuously. Air and liquid are drawn together creating a vapor pressure condition corresponding to cavitation with its tremendous forces. The oxygen is forced into the sewage and creates countless small air bubbles which permeate the entire liquid body.

- **high oxygen transfer efficiency**—requires only 135 cu. ft. of air per lb. B.O.D. removed per day in the Cavitator system.
- **exceptional performance on relatively low flows** with high B.O.D.
- **low installation and operating cost** with a high degree of purification.

Primary clarification and digestion is accomplished in a single structure, the Spiragester. A Spiraflo is used for clarification.

Secure detailed information. See your local Yeomans representative listed in the Yellow Pages of your telephone book under "Pumps" or contact factory direct.

*A Yeomans Tradename

YEOMANS BROTHERS COMPANY
1999-1 N. Ruby Street, Melrose Park, Illinois

Manufacturers of: Distributors • Clarifiers • Digesters • Mechanical Aerators
Pneumatic Sewage Ejectors • Centrifugal Pumps

BOOKS

STEEL RIGID FRAMES MANUAL: DESIGN & CONSTRUCTION—By Martin P. Korn, 170 pp. J. W. Edwards, Publisher, Ann Arbor, Mich. $4.50

BLUEPRINT READING FOR HOME BUILDERS—By J. Ralph Dalzell, 138 pp. McGraw-HillBook Co., 330 W. 42nd St., New York 36, N. Y. $5.50

Reports & Pamphlets

A PROFESSIONAL LOOK AT THE ENGINEER IN INDUSTRY—National Society of Professional Engineers, 1121 15th St., N. W., Washington 5, D. C. $3.00

CONCRETE PAVEMENT MANUAL—Portland Cement Association, 33 W. Grand Ave., Chicago, Ill.

COMMERCIAL STANDARDS FOR DOUGLAS FIR PLYWOOD—CS45-55—U. S. Department of Commerce. Superintendent of Documents, Washington 25, D. C. 15¢

INTERPRETATION OF ENGINEERING DATA: SOME OBSERVATIONS—By Harold F. Dodge. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $1.50

FATIGUE OF ALUMINUM—By R. L. Templin. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $1.50

EFFECT OF CURING CONDITION ON COMPRESSIVE STRENGTH OF CONCRETE TEST SPECIMENS—National Sand and Gravel Association, 1325 E St., N. W., Washington 4, D. C. Limited free distribution.

DETERMINATION OF INCIPIENT ROOF FAILURES IN ROCK TUNNELS BY MICRO-SEISMIC DETECTION—By F. J. Crandell. Available from the author at 175 Berkeley St., Boston 17, Mass.

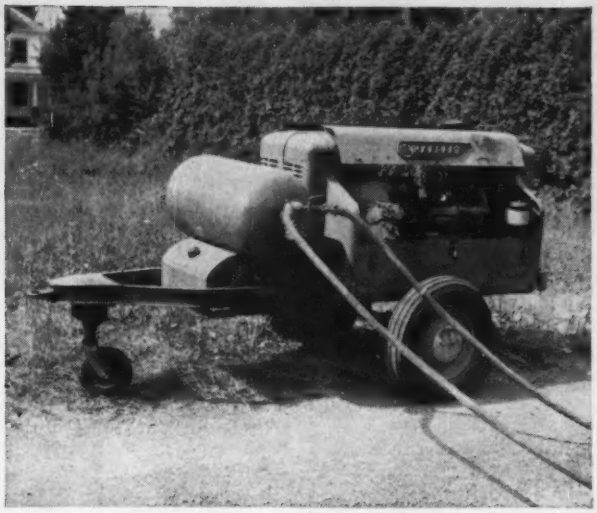
SECONDARY STRESSES IN BUIRED HIGH PRESSURE LINES—By M. G. Spangler: Engineering Report No. 23, Iowa Engineering Experiment Station, Iowa State College, Ames, Ia.

THE HIGHWAY CONSTRUCTION INDUSTRY IN A TEN YEAR NATIONAL HIGHWAY PROGRAM—Capacity Studies on Planning and Design, Materials and Supplies, Construction, Machinery and Equipment. American Road Builders' Assn., World Center Bldg., Washington 6, D. C. $1.00

FIFTY YEARS OF SUBSOIL EXPLORATION—By Karl Terzaghi. Harvard Soil Mechanics Series No. 47. Pierce Hall, Harvard University, Cambridge, Mass. $0.50

VIBRATIONS IN SEMI-INFINITE SOLIDS DUE TO PERIODIC LOADING—By Tse Yung Sung, Harvard Soil Mechanics Series No. 48. Pierce Hall, Harvard University, Cambridge, Mass. $0.50

ANCHORED BULKHEADS—By Karl Terzaghi, ASCE Paper No. 2720. Harvard Soil Mechanics Series No. 49. Pierce Hall, Harvard University, Cambridge, Mass. $0.80



Jaeger "125" compressor, above, simultaneously powered both tools. Photo at right shows section of trench in which up to 7′ of limestone had to be removed. Rock is being drilled with light sinker while heavy breaker is shaping up bottom level of trench. Alfa Construction Co., Pittsburgh, Pa., Contractor.

Jaeger "125" does this work 40% faster

Drilling rock bottom at rock bottom cost

FREQUENT LIMESTONE DEPOSITS up to 7′ thick were encountered in excavating approximately 10 miles of trench on this Palmyra, Pennsylvania, sewer extension. To prepare for blasting, 1½ inch holes were drilled to 4′ with a light sinker, and a heavy breaker was used for shaping up. Both tools were operated simultaneously by a new standard Jaeger "125" compressor.

Because the Jaeger "125" has enough air volume to keep both tools at full pressure, hitting with maximum frequency and impact, *this part of the job was done at least 40% faster than had a 105 ft. compressor been used.*

The Jaeger "125" is the most efficient general purpose compressor you can buy. It is engineered to produce 125 cfm at 100 psi at the lowest cost per cubic foot of air. The Jaeger "75" is equally well suited for operating a single heavy-duty or two light-duty breakers at full efficiency, which 60 ft. compressors cannot do.

Ask your Jaeger distributor to show you what you can save on air and air tool operation, or write today for Bulletin C75-1 giving complete information.

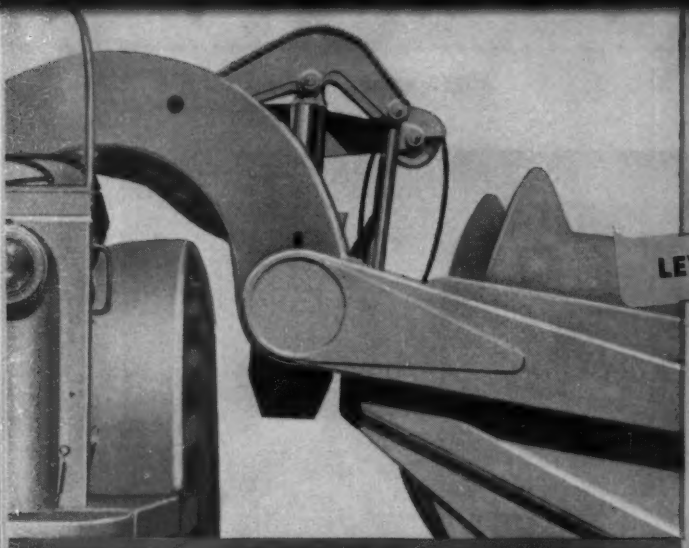
Jaeger Standards:	**75**	**125**	**185**	**250**	**365**	**600**
Old Standards:	60	105	160	210	315	500

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

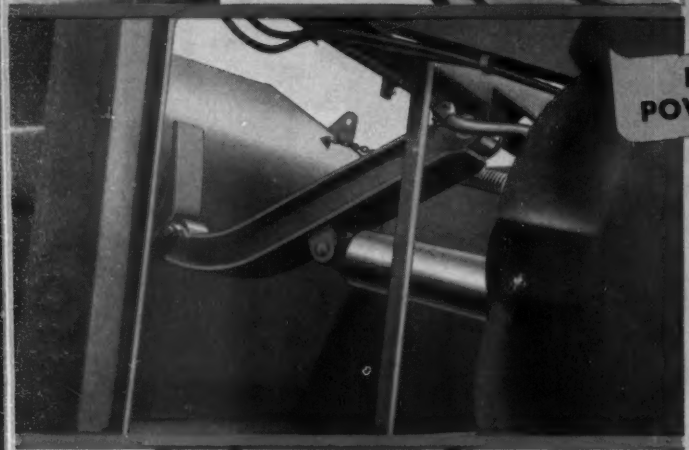
PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES

Here's the New



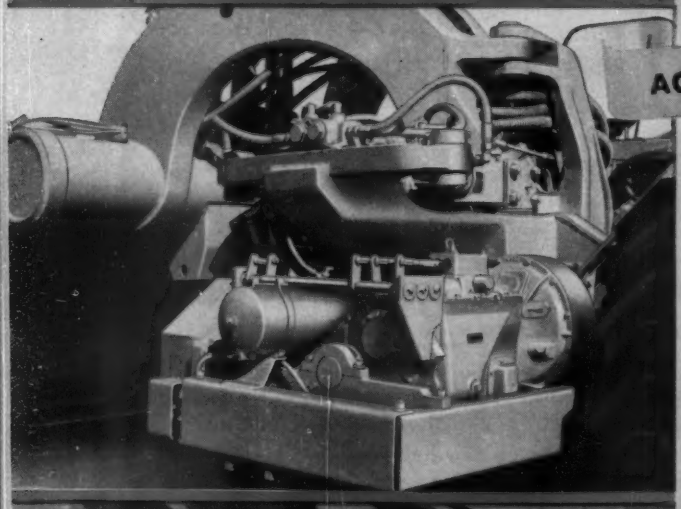
LEVER ACTION

Lever action, an exclusive Euclid feature, does away with cable headaches for good . . . only 12 ft. of cable used for the apron lift. All scraper operations, bowl, apron and ejector, are actuated by levers with independent hydraulic control . . . they're fast and positive . . . not interconnected in any way. All four of the hydraulic jacks are interchangeable . . . one spare fits anywhere!



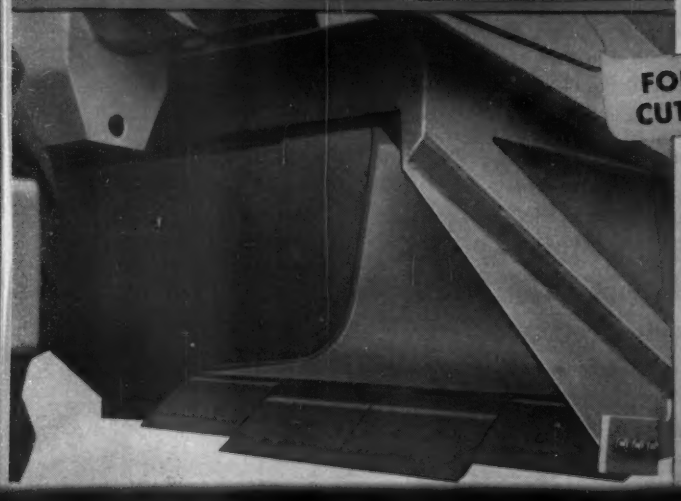
ROLL-OUT POWER EJECTOR

Roll-out power ejector is independently controlled—dumps capacity loads, even wet, sticky material, fast and clean. Maximum power is available at start of the dumping operation when it is needed most. Cam and roller action speeds up ejector action near the end of the dumping operation. High apron lift permits fast, free ejection of big loads.



ACCESSIBILITY

Accessibility of major components — engine, clutch, transmission and drive axles—is a time saving, cost cutting feature of the S-7 design. Repairs or replacement do not require a major disassembly job. Removal of components takes about half the time required for other small scrapers. Easy servicing and maintenance keeps down time to a minimum—means more payloads per hour.



FOUR SECTION CUTTING BLADE

A four section cutting blade provides most efficient loading in any material. Each section is reversible and interchangeable to give longer life and permit the straight or drop center blade arrangements best suited for job requirements. A new cutting edge for any blade arrangement can be obtained by simply reversing or interchanging the sections.

S-7 "Euc" Scraper

POWER and PERFORMANCE

With 143 h.p. this 7 yd. "Euc" has power and performance that's unequalled in small scrapers. . . 20 h.p. for every yard of capacity . . . 18.00 x 25 tires . . . and a top speed of 25 m.p.h. with full payload.

This "Euc" S-7 is the newest addition to Euclid's Scraper line—fastest growing line in the industry because of customer acceptance and preference. It incorporates many of the features that have made larger Euclid Scrapers tops in production and efficiency . . . and has greater accessibility than any previous "overhung" scraper on the market.

Built to Euclid's standards of rugged construction for long service life, the S-7 is engineered throughout for good accessibility of all major components, for fast loading and travel, and for ease of operation. The entire power train—engine, clutch, transmission, planetary drive axle, etc.—is easy to get at for servicing, repair or replacement. This is a mighty important cost cutting feature in a single axle prime mover.

Before you buy your next small scraper, check the profit making features of the S-7. Your Euclid dealer can show you how this new "Euc" can get more work done at lower cost than any other scraper of comparable size.

MANEUVERABILITY

Maneuverability—so important for close quarter work—is excellent with the S-7. Full power steering and hitch design of the two-wheel tractor provides a 29 ft. non-stop turning radius. The 18.00 x 25 or 21.00 x 25 (optional) tires have large rolling radius for good traction and flotation.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID "THE PIONEER"

GM GENERAL MOTORS

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Chicopee Falls**—APRON STRENGTHENING, etc.—BA 5/17—U. S. Eng., 857 Commonwealth Ave., Boston, apron strengthening and calibration hardstand, Westover Air Force Base, ENG.-19-016-55-119. $940,000. Plans deposit $10. Fenton J. Keyes Assoc., Woolworth Bldg., Providence, R. I., archts. CD 4/26.

† **Mass., Watertown**—SPRINKLER SYSTEM—BA On Or About 5/19—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, sprinkler system, Building 131, Watertown Arsenal, ENG-19-016-55-136. $50,000-$100,000. CD 10/13/52.

MASSACHUSETTS—BA 5/25—Massachusetts Turnpike Auth., 80 Boylston St., Boston, Zone 15,
Otis and Blandford—Contract No. 51-031, highway and bridge construction for section of Massachusetts Turnpike in above towns. Plans deposit $70. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, Zone 16, consult. engrs. Thomas Worcester Corp., 85 State St., Boston, section engrs.; adv. ENR 5/12. CD 8/16.

BIDS ASKED—BUILDINGS

Me., Brunswick—FACTORY—BA 5/16—Brunswick Industrial Development Corp., 23 Spring St., factory. $100,000. Plans deposit $25. Stanley S. Merrill, 9 Vine St., Auburn, archt. Woodbury Sporting Goods Co., 95 Main St., Brunswick, Me., lessee. CD 9/28.

Mass., Gardner—ARMORY—BA 5/19—Commonwealth of Mass., Armory Comn., 905 Commonwealth Ave., Boston, armory, West Broadway. $180,000. Plans deposit $50. Wendell T. Phillips, 57 Prospect St., Milford, archt. CD 12/14/53.

N. H., Concord—AUDITORIUM-GYMNASIUM—BA 5/19—Dpt. P. Wks. & Hys., State House Annex, Concord, auditorium-gymnasium on grounds of N. H. State Hospital. Plans deposit $25. Irving W. Hersey Associates, Durham, archts.

Mass., Webster—ARMORY—BA 5/20—Commonwealth of Mass., Armory Comn., 905 Commonwealth Ave., Boston, armory, $180,000. Plans deposit $50. Wendell T. Phillips, 57 Prospect St., Milford, archt. CD 12/14/53.

Mass., Worcester—HOUSING—BA 5/25—Worcester Housing Auth., 52 Pearl St., housing for the elderly. $450,000. Plans deposit $150. Franklyn R. Williams, 316 Lincoln St., archt. CD 8/11.

R. I., Warwick—SEMINARY—BA 5/25—Our Lady of Providence Seminary, Warwick Neck Ave. (selected list of bidders) seminary expansion. $350,000. Charles A. Maguire & Assocs., Turks Head Bldg., Providence, archts. CD 3/24.

Conn., New Britain—SCHOOL—BA 5/26—City Dr. Joseph T. McCook, supt. Schools, Walnut Hill School, constr. Thomas Jefferson Elementary School, Horse Plain Rd. $900,000. Plans deposit $150. Perley F. Gilbert Assoc., Inc., 8 Merrimack St., Lowell, Mass., archt. CD 7/26.

▲ **Conn., New Canaan**—SCHOOL—BA 6/2—Town Bd. Educ., Senior High School Bldg. Comn., South Ave., Senior High School, $1,930,000. Plans deposit $50. Moore & Hutchins, 215 E. 37 St., New York, N. Y. archts. CD 3/9/54.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Eugene R. Eisenberg, Inc.**, 30 Huntington St., Boston, Mass., LB, $237,862, est. $200,500-$300,000, central heating plant, Dow Air Force Base, ENG-19-016-55-03, BANGOR, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 27. CD 4/20.

▲† **The Lane Constr. Corp.**, 965 E. Main St., Meriden, Conn., CA $3,484,270, est. $4,000,000-$4,500,000. aircraft pavements, airfield lighting and utilities, excess cut and fill, Dow Air Force Base, ENG-19-016-55-72, BANGOR, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 14. CD 4/19, under LB.

† **Henry S. Wile Co.**, 862 Walunt St., Newton, Mass., LB $637,000 est. $500,000. dormitory army installation to test heavy clothing, etc. and train men under conditions for Far North Climate, ENG-19-016-55-108, MOUNT WASHINGTON, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 28. CD 5/3.

▲† **Tandy & Allen Constr. Co., Inc.**, 280 Hackensack Ave., Hackensack, N. J., CA $1,195,460, est. $1,238,-890, Air National Guard Facilities (FY-1955) Municipal Airport, ENG-19-016-55-100, BURLINGTON, VT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 21. CD 4/26, under LB.

▲† **Joseph A. Bass Co.**, Sexton Bldg., Minneapolis, Minn., LB $1,245,300. facilities, ENG-19-016-55-5, NORTH CONCORD, VT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 26. CD 4/6.

▲ **MASSACHUSETTS**—Massachusetts Turnpike Auth., 80 Boylston St., Boston, Zone 16,
Berlanti Constr. Co., 15 Oakland Ave., Harrison, N. Y. CA $3,584,174, est. approx. $3,500,000. Contract 51-054 highway and bridge constr., Palmer. Bids Apr. 12. CD 4/15, under LB.

† **A. Cefalo & Sons Co.**, 42 Bennett St., West Lynn, Mass., CA $823,343, est. approx. $900,000. AAA facilities, Boston Defense Area, MASSACHUSETTS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 18. CD 4/22, under LB.

▲† **Carlo Bianchi & Co., Inc.**, 24 Union Ave., Framingham, Mass. CA $2,903,458, est. $2,000,000-$2,500,000. aircraft parking aprons, taxiway warm-up pad, calibration hardstands, Hanscom Air Force Base, ENG-19-016-55-76, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 4/26, under LB.

RHODE ISLAND—State of R. I. & Providence Plantations, F. A. Adams, purch. agt., State House, Providence,
Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., LB $178,544, est. $185,000. b. conc. pavement, No. 867. R. I. Contr. 5506, FAP S-0235 (1), North Kinston and East Greenwich. Bids Apr. 27. CD 4/18.

† **The Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md., LB, $748,630, est. $750,000, dredging Housatonic River, CIVENG-19-016-55-33, CONNECTICUT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 27.

BUILDINGS

LOW BIDS AND CONTRACTS

M. J. Walsh & Sons, Inc., 14 Shawmut Ave., Holyoke, Mass. CA $855,732. U-701 CLASSROOM BLDG., AMHERST, MASS. State, University of Mass., c/o Div. Bldg. Constr., 38 Chaunsy St., Boston, Mass. CD 4/27, under LB.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y., CA, Total est. $8,000,000. general contract, MFG. PLANT, Merrimac Valley Plant, 1600 Osgood St., Route 125, NORTH ANDOVER, MASS. Western Electric Co., 195 Broadway, New York, N. Y. Bids Mar. 22. CD 3/4.

J. G. Roy & Sons Co., 21 Silver St., Springfield, Mass. CA $850,000. MONASTERY, RETREAT HOUSE addn., WEST SPRINGFIELD, MASS. Our Lady of Sorrows Passionist Monastery, 62 Elliot St., Springfield, Mass. Bids Apr. 21. CD 4/13.

Fusco-Amatruda Co., 59 Amity Rd., New Haven, Conn., CA, Est. $400,000. OFFICE and GARAGE, Columbus St., HAMDEN, CONN. Southern New England Telephone Co., 227 Church St., New Haven, Conn. Bids Mar. 30. CD 3/16.

▲ **F. D. Rich Co., Inc.**, 322 Main St., Stamford, Conn., LB, $2,043,000. HOSPITAL addn., STAMFORD, CONN. St. Joseph Hospital, 128 Strawberry Hill Ave., Stamford, Conn. Bids Apr. 26. CD 4/27.

▲ **Irving R. Stitch Associates**, 611 Park Ave., West Hartford, Conn. Owner Builds, $1,750,000. 175 single RESIDENCES, Simsbury Heights, TARIFFVILLE, CONN.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **Md., Andrews Air Force Base**—APRON—BA 5/26—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Southwest Apron, East Operational Apron and taxi widening, ENG-49-080-55-67-(58). Extended date. CD 4/25.

N. Y., Idlewild—TAXIWAYS—BA 5/31—The Port of New York Auth., 111 Eighth Ave., New York, Zone 11, Contr. NYA 610.001, addnl. taxiways, New York International Airport. Plans deposit $30. CD 2/3.

New York—STEAM BOILER—BA 6/3—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, furnishing, installing one 450,000 lb. per hr. steam boiler for 74th Street Power Plant, Manhattan Boro, Contr. P-142.

BIDS ASKED—BUILDINGS

▲ **N. J., Millburn**—STORE—BA 5/25—Skidmore, Owings & Merrill, archts., 575 Madison Ave., New York 22, N. Y. branch store, 14 acre tract for B. Altman & Co., 5 Ave. and 34 St., New York, N. Y. $1,500-000. CD 11/26.

† **Pa., Kingston**—SERVICE CENTER—BA 6/1—U. S. Property & Fiscal Officer for Pennsylvania, RD 2, Annville, erect service center bldg. with heating and hydraulic lifting facilities, electric service and water supply, at Market St. Plans deposit $5.

▲† **N. J. Fort Monmouth**—HOSPITAL—BA On Or About 6/23—U. S. Eng., 111 East 16 St., New York 3, N. Y. 100-200-bed hospital with boiler house, ENG-30-075-55-467, $1,500,000-$2,500,000. CD 1/20/54, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Alco Products, Inc.**, Schenectady 5, N. Y., CA $1,017,183, combination furnishing towers, guides, sills and dogs for all spillway gates at Long Sault Dam and for all control gates, Iroquois Dam, Spec. No. PA 5-15078, St. Lawrence Contr. No. P9, NEW YORK. Power Authority of the State of New York, 270 Broadway, New York, N. Y. Bids Apr. 13. CD 4/15, under LB.

General Electric Co., River Rd., Schenectady, N. Y., LB $852,047. furnishing, del. generator main leads, isolated phase bus, St. Lawrence Power Proj., Spec. No. PA-4-14006, St. Lawrence Contr. No. P8, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Apr. 26. CD 4/11.

† **The L. A. Wells Constr. Co.**, 1121 Schofield Bldg., Cleveland 15, O., CA $48,000. maintenance dredging, Dunkirk Harbor, Dunkirk, NEW YORK. U. S. Eng., Engineer Park, Buffalo 7, N. Y. CD 2/26/47.

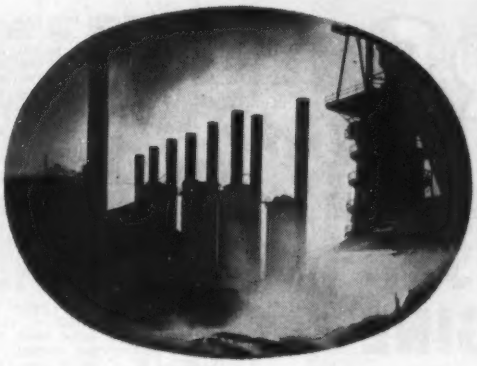
† **South Shore Dredging Corp.**, 100 West Ave., Patchogue, N. Y., LB $68,426, est. $52,404, dredging approx. 27,500 cu. yd. material from Lake Montauk Harbor and 23,300 cu. yd. from Mattituck Harbor, Suffolk Co., CIVENG-30-075-55-51, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Apr. 20. CD 4/13.

† **Delta Electric, Inc.**, 38 Winchester St., White Plains, N. Y., CA $91,900, electrical distr. sys. and substation, Stewart Air Force Base, NEWBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 13, N. Y. Bids Apr. 5. CD 2/21.

▲† **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y., **Johnson, Drake & Piper, Inc.**, 86 Trinity Pl., New York, N. Y., and **Ayers, Hagan & Booth Constr. Co.**, 35 Westminster St., Providence, R. I., CA $10,755,900, constr. addnl. U. S. Air Base facilities, incl. bachelor officers quarters, hangar and shops bldg., storage bldg., subsistence bldg., aircraft parking apron, approach lighting sys. and utilities, U. S. Naval Station, NOY 72767, Spec. 33478, ARGENTIA, NEWFOUNDLAND. Bureau Yards & Docks, Dpt. Navy, 90 Church St., New York, N. Y. Bids Apr. 22. CD 3/17.

† **Michael Contr. Co.**, 142 19th St., Brooklyn 32, N. Y. LB $509,708, addnl. rehabilitation (Phase I), Plattsburgh Air Force Base, ENG-30-075-55-417, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids About Apr. 27. CD 3/29.

(Continued on page 118)

IN  *PITTSBURGH...*

How many of the Raymond-supported buildings can you identify in the photograph below? If you're at all familiar with the Pittsburgh area, you'll probably recognize Forbes Field, the Carnegie Library, Schenley High School and the Falk Clinic, to mention a few. This situation is not unique to Pittsburgh alone.

In most metropolitan areas across the country the skylines are dotted with Raymond-supported buildings. That's because, for over half a century, engineers, architects and contractors have turned to Raymond for foundation jobs, no matter how large or small. May we be of service to you?

253 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

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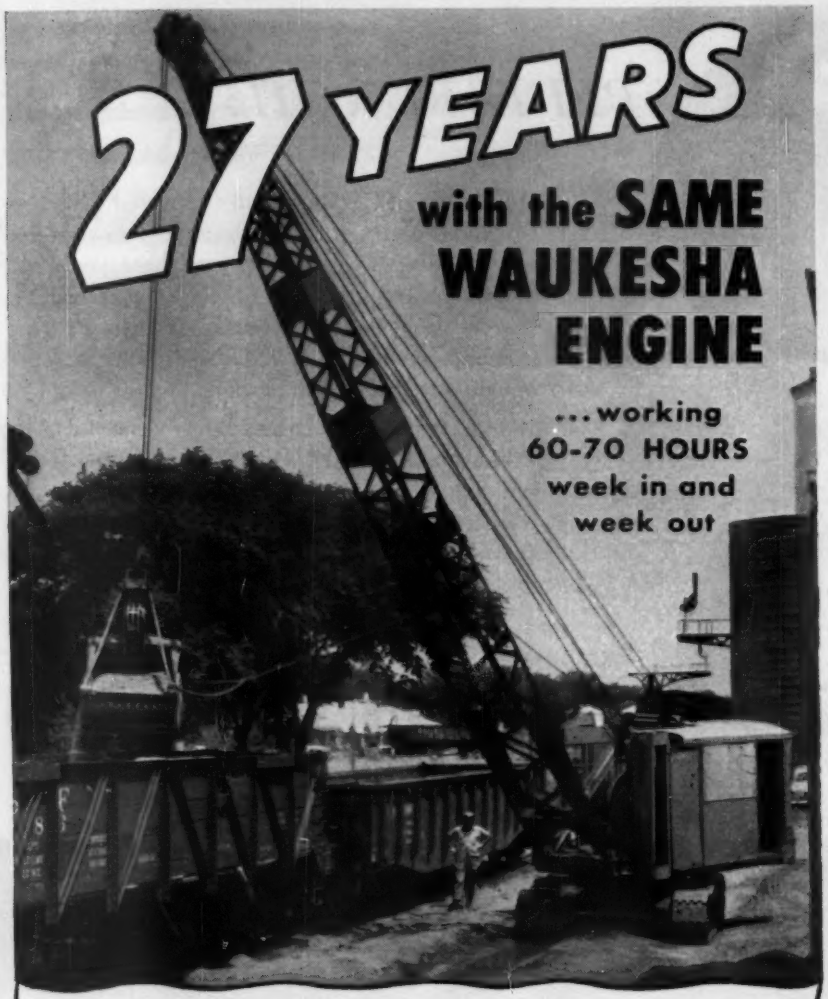
COMPLETE SERVICE FOR ALL TYPES OF CONSTRUCTION.

RAYMOND
CONCRETE PILE CO.
140 Cedar Street, New York 6, N.Y.

Branch Offices in Principal Cities of the United States, Canada, Central and South America

AROUND THE WORLD FOUNDED 1897



Unloading 32 railway cars of sand in 9 hours! That takes a fast operator, a good crane, and speedy, responsive, reliable power.

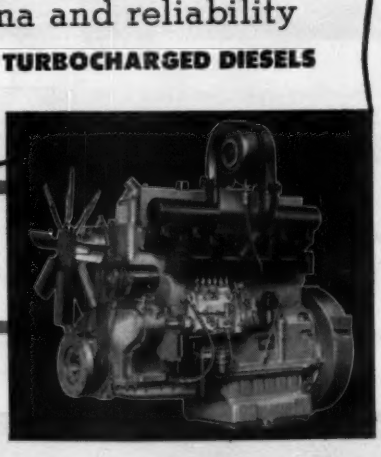
Contractors L. V. Hites and M. W. Martin of Topeka, Kansas, have such a combination.

Operator, Earl Walker, has been speeding up construction jobs with this Waukesha Engine powered American Crane ever since 1928.

That's 27 years' straight—working 60 to 70 hours every week. The Waukesha JL (Serial G-181) is the crane's original engine. It's had several overhauls, of course. Once it got a set of second-hand blocks (when new ones couldn't be had). Sure they offer Earl new cranes. He likes this crane and its Waukesha.

...and modern Waukesha Engines have even greater stamina and reliability

GAS • GASOLINE • NORMAL or TURBOCHARGED DIESELS
—up to 1135 horsepower for every industrial service



Modern 1197 cu. in. Waukesha Turbocharged Diesel—Model WAKDBS—over 350 hp—used in many makes of cranes, shovels and heavy trucks. Send for bulletin.

279

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

(Continued from page 116)

† **Peter Reiss Constr. Co., Inc.,** 105 Court St., Brooklyn 2, N. Y., LB $597,703, constr. A. F. Facilities, FY 1955, Navarho Site, Auxiliary No. 2, Griffiss Air Force Base, ENG-30-075-55-254, ROME, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Apr. 27. CD 4/15.

† **W. J. Burns Co.,** 205 Harrison St., Syracuse, N. Y. LB $143,421, operational facilities, FY 55, Air National Guard, Hancock Field, SYRACUSE, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Apr. 27. CD 2/17.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Nesto Constr. Co., 100 Riverside Ave., Newark, N. J., LB, $459,095, resurf. 1.346 mi. U. S. Route 1 (Business) from Jersey Ave. to Tonnelle Ave. traffic circle, Jersey City, Hudson Co. Bids Apr. 26. CD 4/6.

▲ **Tibbetts Contg. Corp.,** 1 Lawton St., Yonkers, N. Y., LB $1,054,025. Contract 4, easterly and westerly intercepting sewers, force main and regulator chambers along easterly and westerly intercepting sewers, ELIZABETH, N. J. Bd. P Wks., City Hall, Elizabeth, N. J. Bids Apr. 28. CD 3/24.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Pa.—**New Enterprise Stone & Lime Co., Inc.,** New Enterprise, Pa., LB $223,313, wid'n. 3.02 mi. existing pavement with crushed aggregate base and bit. surf., extend rein.-con. bridge over north branch of Little Conemaugh River, T. R. 22, Cambria Co.;

Pa.—**Wilson-Benner, Inc.,** 130 Dunlop St., Bellefonte, Pa. LB $72,562, wid'n. 1.21 mi. existing pavement with crushed aggregate base and bit. surf., south of Bellefonte, T. R. 545, Centre Co.;

Pa.—**Ralph V. Daniels, Inc.,** 338 N. 29 St., Camp Hill, Pa., LB $156,128, wid'n. 2.41 mi. existing pavement with crushed aggregate base and surf. new base and existing pavement with bit.; extend existing rein.-con. culvert and constr. rein.-con. box culvert T. R. 42 from near Aristes to near Catawissa, Columbia Co.;

Pa.—**Charles H. Fry Constr. Co.,** 1902 Cherry St., Erie, Pa., LB $599,284, wid'n. 5.08 mi. existing pavement with crushed aggregate base and surf. new base and existing pavement with bit., incl. extens. of two existing rein.-con. boxes from Fairview Boro-Northeast towards Westminster, T. R. 20, Erie Co.;

Pa.—**C. S. Yoder,** 4 Wine St., Uniontown, Pa. LB $198,445, wid'n. 3.27 mi. existing pavement with crushed aggregate base and bit. surf., extend existing rein.-con. structure over Bush Run, from near Millsboro south towards Dry Tavern, T. R. 88, Greene Co.;

Pa.—**Middlecreek Constr. Co.,** Middleburg, Pa., LB $95,158, wid'n. 1.32 mi. existing pavement with crushed aggregate and surf. new base and existing pavement with bit. from near Reedsville, north and northeast, T. R. 322, Mifflin Co. Bids Apr. 29. CD 3/30.

Rocco Beno, Sharon, Pa. and Farrell, Pa., CA $74,996, pave 5 streets, SHARON, PA. City, Sharon, Pa. Awarded Apr. 26. CD 6/23/52.

American Blower Corp., 8111 Tireman St., Detroit, Mich. LB Contr. PT-109, fans, Fairfield and Canton Ventilator Bldgs., part of Patapsco Tunnel Proj., MARYLAND. Total cost $973,852. State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md.;
General Electric Co., River Rd., Schenectady, N. Y. LB motors (Maryland);
Link Belt Co., 307 N. Michigan St., Chicago, Ill. LB chain transmissions (Maryland);
Thomas Flexible Coupling Co., 407 S. Dearborn St., Chicago, Ill. LB flexible couplings (Maryland).

† **Certified Builders,** 12207 Georgia Ave., Wheaton, Md., LB, $94,949. base, bulk, supply, standard WAREHOUSE, Andrews Air Force Base, ENG-49-080-55-56 (50), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Bids Apr. 26. CD 3/30.

Curtin & Johnson, 1116 W St. N.E., Wash., D. C., LB $179,563, est. $180,000, paving roadway E. Capitol St. from Texas Ave. to 47 St., WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids Apr. 26. CD 4/18.

BUILDINGS

LOW BIDS AND CONTRACTS

Shoreview Homes, Inc., 381 E. 57 St., Brooklyn 3, N. Y. Owner Builds. $420,000. 28 HOUSES, 1536-1570 E. 91 St., BROOKLYN, N. Y. Kallich & Weinstein, 161 Remsen St., Brooklyn 2, N. Y., archts.

Montauk Industries, Inc., 17 Neptune Ave., Brooklyn 29, N. Y. Owner Builds. $420,000. 28 HOUSES, 2315-2383 Bragg St., BROOKLYN, N. Y. Morris Rothstein & Son, 186 Joralemon St., Brooklyn 2, N. Y., archts.

▲ **John W. Cowper Co.,** Sidway Bldg., Buffalo, N. Y., CA $1,366,050, 1 and 2 story, Junior-Senior HIGH SCHOOL, PERRYSBURG, N. Y. Bd. Educ., Central School Dist. No. 1, High School Bldg., Water St., Cowanda, N. Y. Bids Apr. 19. CD 3/28

Carl G. Ek & Son, Olean, N. Y., LB $847,432, general constr. for Salamanca HOUSING Proj. NYS-69, Front Ave. between Memorial Park and Fern Ave., SALAMANCA, N. Y. Salamanca Housing Auth., City Hall, Salamanca, N. Y. Bids Apr. 27. CD 4/15.

Empire Gardens, Inc., c/o David Kraus, archt., 1947 Broadway, New York 23, N. Y. Owner Builds. $800,000. 6 story APARTMENT, 245 Bronx River Rd., YONKERS, N. Y.

▲ **Thomas Constr. Co., Inc.,** 167 Holden Ave., Paterson, N. J., CA $1,400,000 Memorial JUNIOR HIGH SCHOOL 16-acre tract at First Ave. and Ave. of the Heroes, FAIRLAWN, N. J. Bd. of Educ., Fairlawn, N. J. Arthur Rigolo, U. S. Hy. No. 46 and Grove St., Clifton, N. J., archt. CD 6/3.

(Continued on page 121)

"WE DEPEND ON PAGE AUTOMATIC BUCKETS TO KEEP TIGHT SCHEDULE JOBS MOVING"

Projects like the Congress Street Expressway in Chicago and Cook County, Illinois are real tests of dragline buckets. High production digging of many different materials is demanded . . . and dragline buckets take a beating.

Mr. Pete Palumbo, Job Supervisor of Palumbo Excavating Company, Chicago, says "Loading out trucks on a tight schedule as we have to do, we depend on Page Automatic Buckets to keep the job moving. On this job we have to dig everything from old sewers, foundations and cement floors to the sticky, wet clay which underlies most of the route, and we have found that the Page Automatic RM bucket we are using digs fast and dumps clean in all conditions."

Page Automatic Buckets are best known because—they *produce more yardage per rated capacity than any other bucket.*

Let us give you a demonstration. We will put the right Page Automatic on your machine and prove that it will increase production by as much as 10 to 25%. Write to Dept. E asking for details and Bucket Catalog GPB454. There's no obligation.

Page Engineering Co., Clearing P.O., Chicago 38

B3102

Page

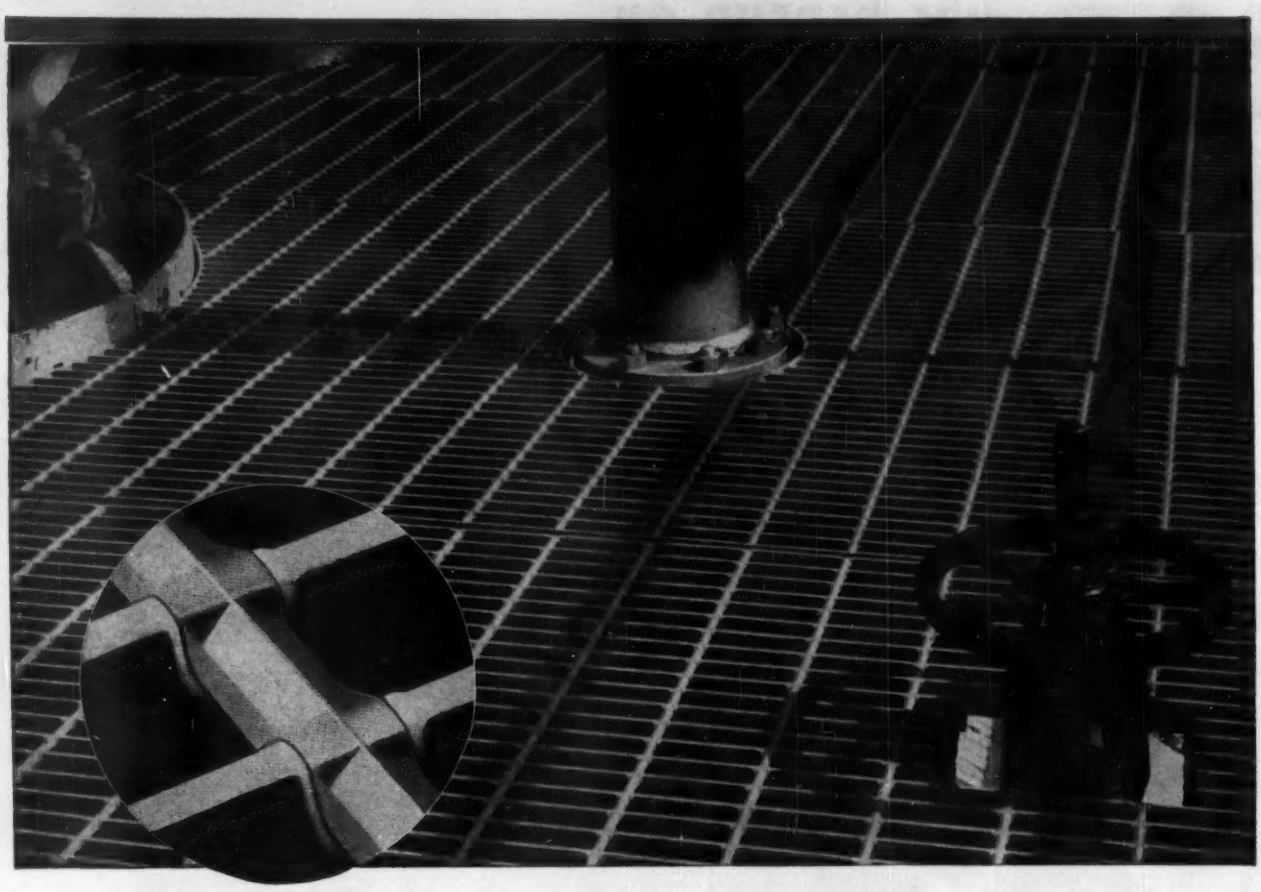
Automatic Dragline Buckets

Walking Draglines

If it's a Page...It DIGS

119

(Continued from page 118)



Gary

RESISTANCE-WELDED GRATING TAILOR-MADE TO YOUR NEEDS

When you use Gary Welded Grating, it's delivered to you ready for installation. Every opening—around pipes, bases, stair wells—is cut exactly to your specifications. You can be sure it will fit—installation will be easier—you'll save time and expense. And, it's the neatest appearing open steel flooring obtainable. Resistance welding is accomplished by synchronized application of hydraulic pressure and electric current, resulting in a forged weld, with properties far superior to fusion welds, both mechanically and metallurgically. Tops of all bars are flush—for greater safety. Get the complete story of Gary gratings, stair treads and decking by writing for Catalog E-55.

Standard Steel Spring Division

ROCKWELL SPRING AND AXLE COMPANY
4004 East Seventh Avenue • Gary, Indiana

FREE SAMPLE
Paper weight size sample sent free when requested on your company's stationery.

(Continued from page 118)

Oakland Heights Homes, c/o Harvey J. E. Milkon Co., 35-12 Broadway, Rte. 4, Fairlawn, N. J. Owner Builds $575,000. 45 HOUSES on tract at Franklin Ave. and Rutgers Dr., OAKLAND, N. J.

▲ **Oradell Village Homes**, c/o Peter H. Butler, archt., 172 State St., West Englewood, N. J., Owner Builds, $2,400,000. 104 HOUSES on tract at Prospect and Taylor Aves., ORADELL, N. J.

Matthew Leivo & Sons, Inc., New Castle, Pa. LB $649,000. general constr. HIGH SCHOOL for Wattsburg Area Joint School Dist., WATTSBURG, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Apr. 28. CD 4/7.

▲ **Rosemount Constr. Co.**, 101 Charles Dr., Bryn Mawr, Pa., CA $4,685,000. APARTMENT, RESTAURANT and GARAGE, WAYNE, PA. Chetwynd, Inc., 101 Charles Dr., Bryn Mawr, Pa. Awarded Apr. 4. CD 4/6, under LB.

Costanza Constr. Co., 225 E. Redwood St., Baltimore 2, Md. LB $574,452. Fire Department TRAINING SCHOOL, DRILL TOWER, reservoir for pumping-training, pit for oil fires, Pulaski Hy., BALTIMORE, MD. City, Bureau Building, Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Apr. 27. CD 4/13.

E. Eyring & Sons, 800 S. Conkling St., Baltimore 24, Md. CA $516,495. CONE WING Baltimore Museum of Art, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. CD 4/26, under LB.

† **Dist. P. Wks. Office**, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., cancelled bids to have been opened Apr. 27, NUCLEAR REACTOR Bldg. 71, Naval Research Laboratory, Bellevue, NOY 76565. WASH., D. C. Will re-advertise. CD 3/28.

† **Dist. P. Wks. Office**, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., cancelled bids to have been opened May 11, LANGUAGE TEACHING FACILITIES BARRACKS alterations, new electrical and lighting sys., air conditioning, Bldg. T-15, Naval Receiving Station, NOY 86404, WASH., D. C. Will re-advertise. CD 4/27.

▲ **John Tester & Son, Inc.**, 1620 Second St. N.W., Wash., D. C., CA $1,518,450, three wings to present SEMINARY, WASH., D. C. Immaculate Seminary, 4344 Wisconsin Ave. N.W., Wash., D. C. Bids Apr. 24, awarded Apr. 28. CD 4/27, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **North Carolina**—BA 5/17—U. S. Eng., 308 Customhouse, Wilmington, repairs to Neuse River Flood Control Cut-Off Channel, Goldsboro, CIVENG-31-075-55-16. CD 6/9/44.

† **N. C., Jacksonville**—OFFICERS QUARTERS—BA 5/17 P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., bachelor officers quarters and addns. to officers mess, Marine Corps Air Facility, New River, NOY 85880, Spec. 43066. Plans deposit $20.

La., New Orleans—BA 5/20—City Purch. Dpt., 320 City Hall, Proposal No. 5179, Wisner Drive overpass Wisner Dr. at Florida Ave. $868,000. Plans deposit $50. G. A. Hoff & Co., 820 Union St., engrs. CD 5/3/51.

† **Ky., Louisville**—GRIT BLAST ROOM—BA 5/24—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va., grit blast room addn. to Building "D". Naval Ordnance Plant, NOY 86575, Spec. 45315. Plans deposit $10.

† **S. C., Myrtle Beach**—STORAGE IGLOO—BA 5/24—U. S. Eng., Customhouse, Charleston, cost. explosives storage igloo and small arms magazine, Myrtle Beach Air Force Base, No. 38-081-55-77. CD 4/12.

† **VIRGINIA**—BA 5/24—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,
James City Co.—steel I-beam bridge with rein.-con. substructure on timber piling and other work between Glass House Point and Jamestown Island, Colonial Parkway.

† **La., Lake Charles**—THEATER and GYMNASIUM—BA 5/27—U. S. Eng., P. O. Box 1229, Galveston, Tex., theater and gymnasium, Lake Charles Air Force Base, ENG-41-243-55-64, $500,000-$1,000,000.

▲† **South Carolina**—BA About 6/1—U. S. Eng., 33 Customhouse, Charleston, dredging in Charleston Harbor, S. C., 35-foot project channel by-passing Shoal No. 7 and Channel East and North of Drum Island, CIVENG-38-081-55-10. CD 4/25.

† **VIRGINIA**—BA 6/2—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,
James City Co.—const. steel I-beam bridge with rein.-con. substructure on timber piling over Mill Creek, etc., Colonial Parkway, Proj. 1D6.

† **N. C., Goldsboro**—REFUELING SYS.—BA About 6/3—U. S. Eng., 308 Customhouse, Wilmington, aircraft refueling sys., Seymour Johnson Air Force Base, ENG-31-075-55-54. Plans deposit $10.60.

† **N. C., Goldsboro**—SQUADRON OPERATIONS BLDG., etc.—BA About 6/3—U. S. Eng., 308 Customhouse, Wilmington, squadron operations bldg., electronic shop, wing hangar, control tower and proficiency training bldg., Seymour Johnson Air Force Base, ENG-31-075-55-55. Plans deposit $41.60.

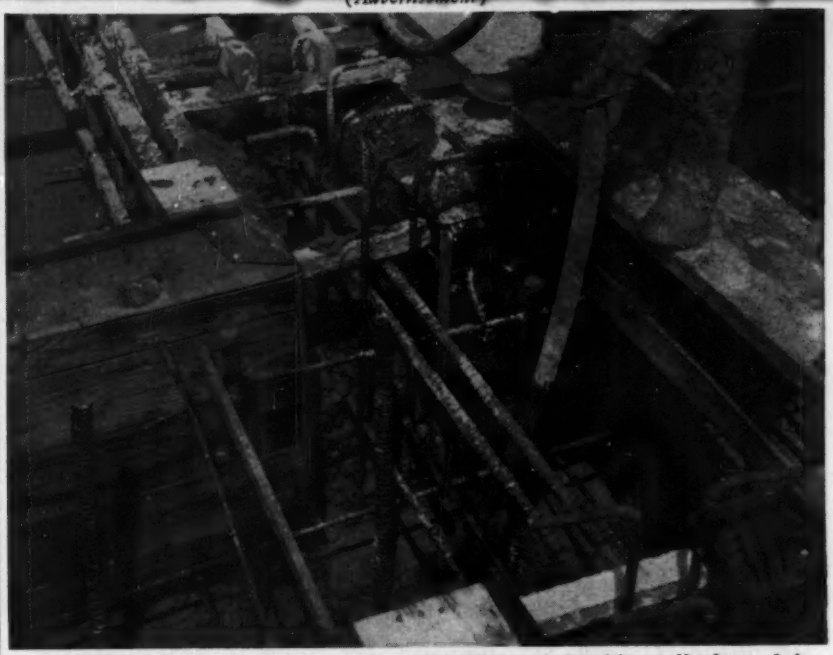
† **Georgia**—RAILROAD TRACK WORK—BA About 6/6—U. S. Eng., 200 E. St. Julian St., Savannah, railroad track work, Kings Bay, ENG-09-133-55-64.

BIDS ASKED—BUILDINGS

† **Va., Yorktown**—HEAD FACILITIES—BA 5/17—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, head facilities, Building Y&D 7, Naval Mine Depot, NOY 86558, Spec. 45302 S/F. Plans deposit $10.

(Continued on page 124)

(Advertisement)



PROPER VIBRATION AND GOOD FORMS used in this well-planned box girder intersection make it easy to produce the best possible concrete. Good vibration technique is simple with good equipment, and . . .

Vibration Know-How Produces Better Concrete the Easy Way

One of the many ways experienced concrete foremen get maximum benefit from vibration is by planning concrete placement so each new dump is backed into a previous dump. This results in a smooth surface (no rock pockets) with maximum bond and greater strength. In the above photo the workman has just finished vibrating a dump at the center of a box girder intersection. As each succeeding dump is placed he will vibrate from the center outward, working it into concrete previously placed in the side members.

Appearance of sheen on the surface of the concrete gives visual indication that vibration is complete. With the modern high frequency vibrators pioneered by VIBER this requires only about 10 to 30 seconds, depending on the characteristics of the concrete.

• **Vibrator Operators** soon develop a "feel" which tells them the exact condition of concrete during vibration without seeing it. An experienced operator depends on this "feel" and the sound of his vibrator more than on the appearance of the concrete to tell him when vibration is completed.

Experienced operators describe the feel of concrete when the vibrator is first inserted as "rough" and "rocky." In a matter of seconds it "smooths out" and becomes "creamy," at which point vibration is complete and the unit may be removed from the concrete.

• **Good Forming** and proper vibration are essential where finished appearance is important, as it was on this overpass built by Erickson, Phillips, and Weisberg as part of the East Bay Freeway in Oakland, California. Tight forms made of well-seasoned lumber adequately braced can take full advantage of vibration to produce smooth, rock pocket-free concrete. VIBER'S replaceable rubber tipped vibrators are specially designed to prevent any damage to such forms, which might cause blemishes on the finished concrete surface

• **For further information** on VIBER'S complete line of internal and external vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, Calif., Dept. 76

VIBER

CONCRETE VIBRATORS SINCE 1931

170 cu. yds. per hour on 1600-ft. cycle

Tulsa contractor averages 170 cu. yds. hourly with TD-24s and B-250 INTERNATIONAL scrapers on 1600-ft. cycle while helping cut 24 per cent off length of Oklahoma highway

The D. W. Falls Construction Company of Tulsa holds the prime grading contract for 7.6 miles of Oklahoma State Route No. 20 between Hominy and Ralston. They were able to make cost-cutting short cuts in earthmoving operations on the project that cut travel distance 24 per cent by using three INTERNATIONAL TD-24 drawn B-250 scrapers moving 27 cubic yard-heaped loads, and push-loaded by a TD-24 crawler.

Take it from Supt. Bob Derington:

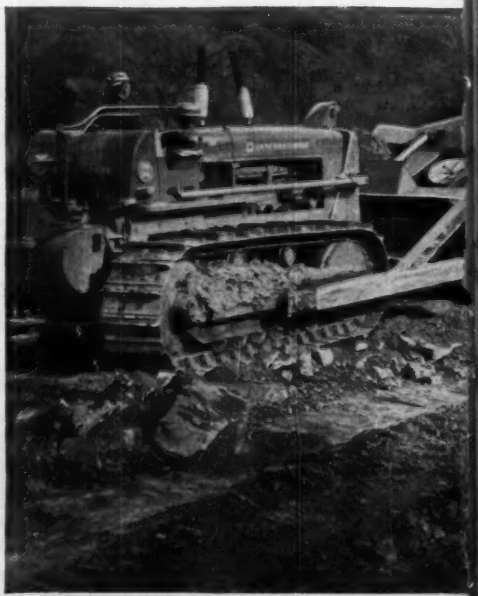
"It's really surprising how much dirt these big scrapers will move per day. Under fairly good working conditions, each unit gives me a day-after-day average of 170 cu. yds. of dirt an hour while working a 1,600-foot cycle."

You can get pay-off performance by hitching INTERNATIONAL scrapers to the TD-24—still the Champ of the crawlers with 161 drawbar horsepower. That's the kind of hook-up that loads, hauls and spreads faster than any other combination . . . day after day . . . year after year. Just call your INTERNATIONAL Industrial Power Distributor for demonstration proof. He'll bring the combination you specify anywhere, anytime so that you can see why INTERNATIONALS make every load a payload.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

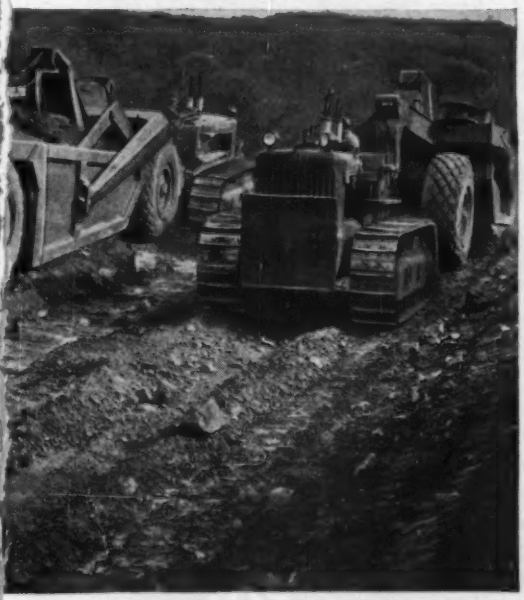
INTERNATIONAL
INDUSTRIAL POWER
MAKES EVERY LOAD A PAYLOAD

INTERNATIONAL HARVESTER



SMOOTH-WORKING TEAM. Four INTERNATIONAL TD-24 crawlers and three B-250 scrapers delivered a total of 510 cu. yds. hourly on the 1,600-foot cycle for D. W. Falls.

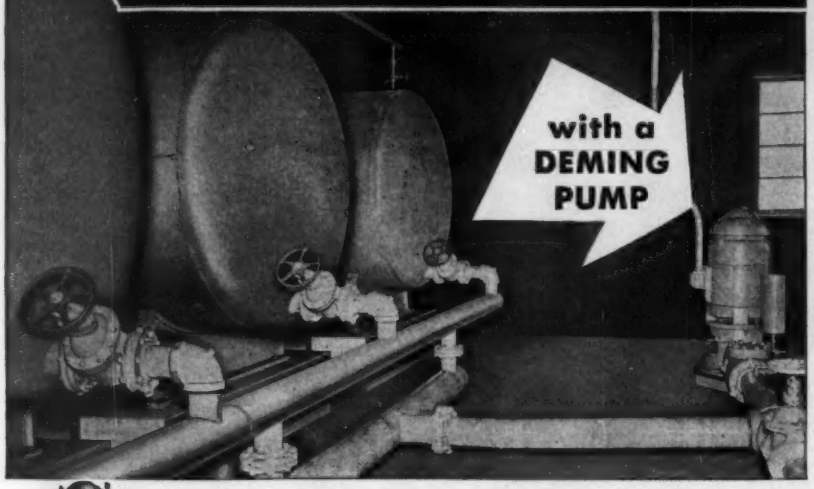
TD-24 POWER FRONT AND BACK PUTS these kinds of 27 cu. yd.-heaped loads in the INTERNATIONAL B-250 scraper in a matter of seconds for D. W. Falls on the company's 7.6-mile project requiring 250,000 cu. yds. of excavation.

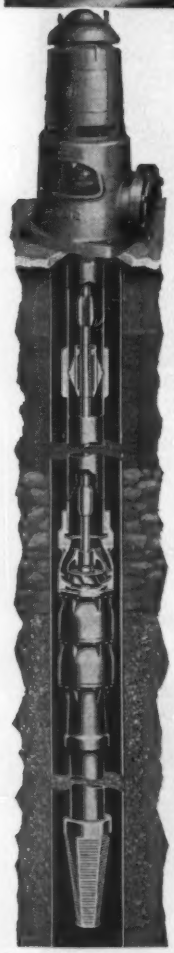


EASY, FAST HAULING of heaped loads is assured with this equipment combination. The B-250 scraper requires minimum drawbar pull and has a low center of gravity that gives outstanding stability on side slopes like this.

STOCKPILING WATER

Against potential shortages





● A reserve supply of water for protection against shortage is a *"preventive form of insurance."* That and other considerations caused a midwestern manufacturer to call in a Deming Distributor for assistance in planning the company "water works" illustrated above.

Other considerations included the high cost of "city water;" the uncertainty of city supply during summer peak demands; and the need to process water in advance of its use in plant operations.

Water is pumped from a 140-ft. deep well on company property. Capacity of the Deming Vertical Turbine Pump is more than 650,000 gallons a day at 50-70 lbs. pressure. Pump is operated by a 50 H.P. motor. The three storage tanks shown in the picture have a combined capacity of 22,500 gallons.

The "pay-off" on this installation is the big reduction in water costs and the "preventive insurance" against possible stoppage of plant operations due to lack of water.

Investigate the advantages of Deming Vertical Turbine Pumps. Write for BULLETIN NO. 4700.

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

75th ANNIVERSARY DEMING PUMPS 1880 - 1955

(Continued from page 121)

▲ W. Va., Princeton—SCHOOL—BA 5/17—Bd. Educ., Mercer Co., Princeton, Bluefield High School, Bluefield, $1,000,000. Alex Mahood, Bluefield, archt. CD 4/6.

† Ky., Fort Knox—QUARTERS—BA 5/18—Purchasing & Contracting Officer, Fort Knox, Impvs. to 85 sets family quarters, Inv. 15-014-55-147. CD 9/28/51.

† Va., Fort Eustis—SERVICE CLUB—BA 5/18—U. S. Eng., foot of Front St., Norfolk Zone 1, enlisted men's service club, ENG-44-110-55-33. $325,000.

† Va., Fort Monroe—QUARTERS REHABILITATION—BA 5/20—Purch. & Contg., Fort Monroe, rehabilitation of quarters in 28 bldgs., Inv. 45.

Ga., Athens—SCHOOL—BA 5/31—State School Bldg. Auth., 41 Exchange Pl., S. E., Atlanta, Lyons Elementary School; Alps Road Elementary School. Plans deposit $50 each. Aeck Associates, 140 Peachtree St., N. W., Atlanta, archts.

Ga., Douglasville—SCHOOL—BA 6/2—State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Douglasville Elementary School, Plans deposit $50. Charles W. Jenkins, 326 Healey Bldg., Atlanta, archt. CD 5/19/52.

† S. C., Rock Hill—TRAINING CENTER—BA About 6/5—U. S. Eng., 33 Customhouse Charleston, army reserve training center, York Ave., ENG-38-081-55-81.

† Georgia—BUILDINGS—BA About 6/12—U. S. Eng., 200 E. St. Julian St., Savannah, buildings and fueling, Kings Bay, Serial No. ENG-09-133-55-65.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

VIRGINIA—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,
rejected bids Apr. 20, painting James River Bridge, City of Warwick, Isle of Wight Co. LB $171,800. CD 4/25, under LB.

† J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., LB $813,428 officers' quarters, Charleston Air Force Base, North Charleston, No. 38-081-55-65, CHARLESTON, S. C. U. S. Eng., Customhouse, Charleston, S. C. Bids Apr. 26. CD 4/7.

▲ FLORIDA—State Road Dpt., Tallahassee,
Fla.—S. M. Wall Co., Gainesville, Fla., LB $200,749 rock base, rework existing base, surf. storm sewer, curb, gutter, excav. and embankment 45,278 sq. yd. University of Florida, Gainesville, Job 2618-118, Alachua Co.;

Fla.—Hardee Land Clearing, Plant City, Fla., LB $107,853, excav., slab. base, surf., drainage structures 5.392 mi. State Road S-127, Job 2751-175, Baker Co.;

Fla.—Duval Eng. & Contg. Co., Box 1588, Jacksonville, Fla., LB $266,816, maintenance, traffic, grading roadway, rock base with b. Conc. drainage structures 0.80 mi. State Road 10 in Baldwin, F 006-5 (1), Job 7201-207, Duval Co.;

Fla.—E. E. Collins Constr. Co., 2175 S.W. 32 Ave., Miami, 34, Fla., LB $269,620. maintenance, traffic, grading roadway, rock base with bit. b. conc., wid'n. 10 existing conc. bridges 6.011 mi. State Road 90 F 012-2 (2), Job 0304-250, Collier Co.;

Fla.—Marion Constr. Co., Box 577, Ocala, Fla., LB $735,596, heavy excav., rock base, bit. b. conc., small drainage structures 18.815 mi. State Rd. 500 F 029-1 (3), Job 3607201, Marion Co.;

Fla.—W & M Constr. Co., Williston, Fla., LB $304,781 maintenance traffic, grading roadway, rock base with bit. b. conc. 3.432 mi. State Rd. 50, F 029-1 (4) Job 3401-203, Levy Co. Bids Apr. 28. CD 4/18.

† Acme Electric Co., Inc., P. O. Box 606, Andalusia, Ala., CA, $91,682, communication facilities, Forrest Sherman Field, Naval Air Station, NOY 78172, Spec. 38667, PENSACOLA, FLA. Officer in Charge of Constr. Bldg. 45, Pensacola, Fla. Bids Apr. 7. CD 3/16.

Steel City Constr. Co., 2810 Linden Ave., Birmingham 9, Ala., CA, $142,415, swimming pool and community center, Memorial Park, BIRMINGHAM, ALA. Birmingham City Park & Recreation Bd., City Hall, Birmingham, Ala. Greer, Holquist & Chambers, Tallings Bldg., Birmingham, Ala., archts. Awarded Apr. 27. CD 11/17/53.

† Algernon Blair, Inc., First National Bank Bldg., Montgomery, Ala., CA $910,718, 2 story, 48,000 sq. ft. LIBRARY, MAXWELL AIR FORCE BASE, ALA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids Apr. 14, awarded Apr. 27. CD 3/25.

MISSISSIPPI—State Hy. Dpt., Jackson,
Miss.—L. & A. Contg. Co., Hattiesburg, Miss., CA, $434,390, est. $470,000, grading, drainage, culverts, bridges 17.063 mi. Hy. 59, between Berndale and McLain, S-0119 (1) A, George and Greene Counties;
Miss.—H. H. Metts, Louisville, Miss., CA $197,628, est. $225,000. base, bit. surf. 9.076 mi. Hy. 322, between Lambers and Crowder, S 0836 (2) A, Quitman Co. Bids Mar. 22, awarded Apr. 12. CD 3/14.

▲ MISSISSIPPI—State Hy. Dpt., Jackson,
Miss.—Cobb Bros. Constr. Co., Citizens Bank Bldg., Meridian, Miss., CA, $265,783, est. $320,000, grading, draining, culverts, bridges 11.474 mi. Miss. Hy. No. 584 S 0165 (1) A, Amite and Pike Counties; CA, $100,138, est. $120,000, grading, draining, culverts, box bridges 4.861 mi. Miss. Hy. 29, SP 29-6 (1), Perry Co.; CA, $177,517, est. $210,000, box bridge, base, bit. surf. 6.680 mi. Miss. Hy. 469, SP 460-7474-(6) Simpson Co.;
Miss.—W. R. Aldrich & Co., 2493 Bayward Ave., Baton Rouge, La., CA $381,043, est. $460,000, grading, draining, culverts, cattle passes on Miss. Hy. 33 F-49-1 (9), Franklin and Jefferson Counties;
Miss.—Raley Contg. Co., Aberdeen, Miss., CA, $226,975, est. $290,000, grav. surf. 8.533 mi. Miss. Hy. 32, F-051-2 (1), Chickasaw Co.;

(Continued on page 126)

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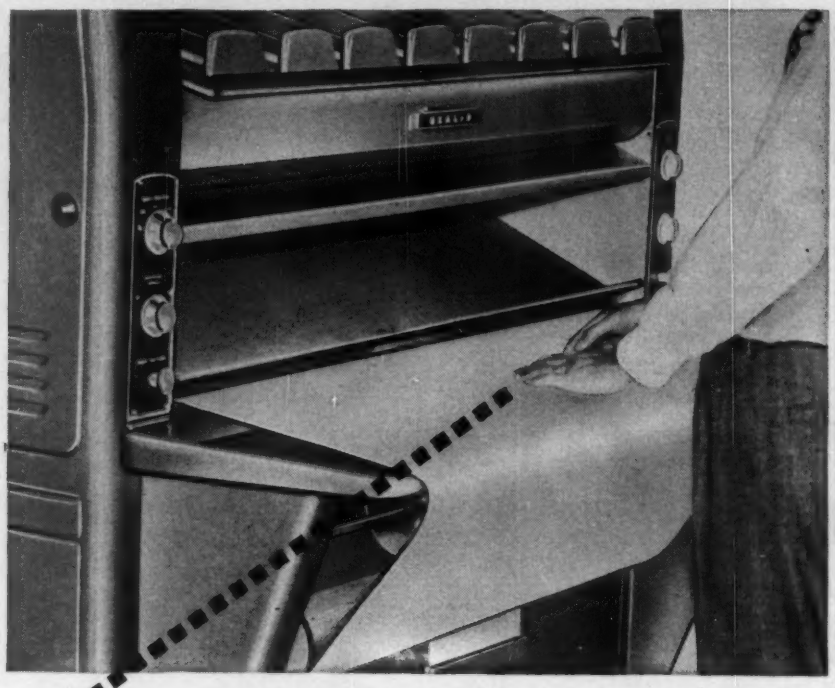

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(Continued from page 124)

Miss—Hyde Constr. Co., Inc., Jackson, Miss., 1804 N. Mill St., Jackson, Miss., CA, $283,521, est. $285,000, base, bit. surf., c. conc. 1.586 mi. U. S. Hy. 65, F-U-065-1 (1), Adams Co.;

Miss.—Linwood Smith Contractor, Lake Village, Ark., CA $180,952, est. $205,000, base, bit. surf. 5.568 mi. Miss. Hy. 448, SP-448-32-50 (1), Sunflower Co. Bids Apr. 26, a Grand Total $1,615,929. CD 4/14.

▲† F & C Engineering Co., Box 2426, Houston, Tex. LB $3,082,815. Schedule A, airfield paving, Alexandria Air Force Base, Inv. 55-52, ALEXANDRIA, LA. U. S. Eng., Box 867, Little Rock Ark. Bids Apr. 21, CD 4/6;

T. L. James & Co., Ruston, La. and W. Aldrich & Co., Box 1751, Baton Rouge, La. LB $2,581,051. Schedule B (Alexandria Air Force Base).

† C. F. Rule Constr. Co., 217 13 Ave. N., Nashville, Tenn., LB, $346,875, wall and levee unit 2, Pineville, Bell Co., KENTUCKY. U. S. Eng., Seventh Ave. and Broadway, Nashville, Tenn. Bids Apr. 26. CD 4/8.

† Great Lakes Dredge & Dock Co., 122 S. Michigan Ave., Chicago, Ill. LB $899,000. dredging channel Green River, ENG-15-029-55-83, KENTUCKY. U. S. Eng., P. O. Box 59, Louisville 1, Ky. Bids Apr. 28. CD 4/8.

Oman Constr. Co., Acklen Park, Nashville, Tenn., LB $129,911, 14,880 lin. ft. sanitary sewer mains, NASHVILLE, TENN. City, City Hall, Nashville, Tenn. CD 10/7/52.

BUILDINGS

LOW BIDE AND CONTRACTS

State School Bldg. Auth., 41 Exchange Pl. S. E., Atlanta, Ga., rejected bids Apr. 5, Summerville High and Elementary SCHOOL, Pennville White Elementary SCHOOL, Menlo White Elementary and HIGH SCHOOL, Walmeyer Elementary, Sublign Elementary and HIGH SCHOOL, cafeteria, addn. to Summerville High and Elementary SCHOOL addns., SUMMERVILLE, GA. LB $837,854. will re-advertise. CD 4/18, under LB.

▲ The Fluor Corp. Ltd., 2500 Atlantic Blvd., Los Angeles, Calif., CA, est. $1,000,000. design and construct PLANT addn., TARRANT, ALA. Kentona Chemical Corp., (Alabama By-Products Co., P. O. Box 354, Birmingham, Ala., and Hercules Power Co., Wilmington, Del.)

R. P. Farnsworth & Co., Inc., Box 850, New Orleans, La. CA $700,875. 9 story OFFICE-STORES, NEW ORLEANS, LA. Rettal Improvement Corp., 338 Baronne St., New Orleans, La. CD 4/8, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ill., Chicago—BA 5/19—City, City Hall, grade separation Northwest Expressway at Madison St. CD 12/2/53.

Wis., Menasha—SWIMMING POOL, etc.—BA 5/24—City, City Hall, swimming pool, instruction pool, wading pool, bath house, treatment plant, bldg., treatment equip. walks, electrical work, mechanical work. $80,000. Stanley Eng. Co., Hershey Blvd., Muscatine, Iowa, engr. CD 4/20.

† Illinois—BA 5/26—U. S. Eng., 420 Locust St., St. Louis 2, Mo., underseepage cutoff trenches, Harrisonville and Ivy Landing Drainage & Levee Dist. Proj. Item VI-0 (1), Monroe Co., CIVENG-23-065-55-72. Extended date. CD 4/22.

† Mich., Marquette—QUARTERS—BA 5/26—U. S. Eng., 600 E. Jefferson St., Detroit, officers' quarters, K. I. Sawyer Air Base.

† Mich, Marquette—BIT. ROADS, etc.—BA 5/27—U. S. Eng., 600 E. Jefferson Ave., Detroit, bit. roads, concrete sidewalks, K. I. Sawyer Air Base.

BIDS ASKED—BUILDINGS

▲ Mich., Lincoln Park—STORE—BA 5/17—At office Giffels & Vallet, Inc., archt., 1000 Marquette Bldg., Detroit, store, Southfield Rd. and Dix Ave. for Sears Roebuck & Co., 15001 Woodward St., Detroit, Mich. $2,000,000. CD 3/3/54.

Mich., Southfield—SCHOOL—BA 5/18—Southfield Twp., Education Twp., School Dist., elementary school Nine Mile Rd. Plans deposit $25, refundable. O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 1/19.

O., Copley—HIGH SCHOOL—BA 5/21—Bd. Educ., Copley School Bldg., Copley, high school adjacent to existing school. Plans deposit $100. Firestone & Motter, 1412 Cleveland Ave. N. W., Canton, Zone 3, archts. CD 11/9.

O., Dayton—SCHOOL—BA 5/25—Bd. Educ., 232 N. Main St., 1 story brick, concrete Fairport School addn., 1925 Fairport Ave. $450,000. Plans deposit $25. W. Ray Young & John Sullivan, Jr., 419 Third Natl. Bldg., archts.-engrs. CD 2/24.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

B. F. Perry Constr. Co., 760 Home Ave., Akron, O. CA $94,167, E. North St. Bridge, 97½ ft., over Little Cuyahoga River, AKRON, O. Comrs. Summit Co., Court House, Akron, O. Bids Apr. 27, awarded Apr. 29. CD 4/13.

† Joseph Skilken & Co., 383 S. 3 St., Columbus, O.- LB $921,338, est. $794,828, alert hangar, readiness hangar with shops; readiness crew bldg., rocket storage checkout and assembly bldg., incl. utilities, paving and parking areas, Lockbourne Air Force Base, ENG-46-022-55-14, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Apr. 28. CD 4/4

† Sumner Sollitt Co., 307 N. Michigan Ave., Chicago, Ill., CA, $449,500, alert hangar, readiness bldg.,

(Continued on page 128)

Bracing for Golden Gate Bridge Fastened with High-Strength Bolts

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(Continued from page 126)

rocket storage facility, Bunker Hill Naval Air Station, NOY 86018, PERU, IND. Ninth Naval Dist., Naval Training Station Bldg. 1A, Great Lakes, Ill. CD 1/7/53.

Leninger Constr. Co., 30 N. La Salle St., Chicago 2 Ill., LB $523,530, paving Kedzie Ave. from Cermak Rd. to Chicago Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 27. CD 4/21.

Herlihy Mid Continent Co., 135 S. La Salle St., Chicago 3, Ill., LB $543,880. Northwest Expressway grades separation under Randolph St. CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 28. CD 4/14.

▲ **Louis Scully & Sons**, 6127 N. Hiawatha St., Chicago, Ill., CA $972,493, storm and sanitary sewers in east side of 144 St. to 157 St., HARVEY, ILL. City, City Hall, Harvey, Ill. Bids Mar. 14, awarded Apr. 18, CD 3/23 under LB;

John C. Tully Co., 33 N. La Salle St., Chicago 2, Ill., CA $980,160, storm and sanitary sewers Union Park, Washington St. and laterals (Harvey, Ill.)

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,

N. M. Isabella, Inc., 714 Market Pl., Madison, Wis., CA $507,159, base, c. conc. 6.411 mi. U. S. Hy. 14, Proj F 08-2 (19) and T 08-2 (10), Vernon Co. Bids Apr. 26. CD 5/2, under LB.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison

Wis.—Hoffman Constr. Co., Black River Falls, Wis., LB $385,792, Contract 1, grading, base course 7.785 mi. S. T. Hy. 71, Proj. T 0489 (4), Juneau Co.;

Wis.—Norbert Kalscheur, Sauk City, Wis., LB $114,292 Contract 1, grading, base course 4.668 mi. C. T. Hy. "F", Proj. S 0357 (8) and S 0357 (9) Lafayette and Iowa Counties;

Wis.—N. M. Isabella, Inc., 714 Market Pl., Madison, Wis., LB $211,520. Contract 1, base, asph. pavement 0.548 mi. City Street, Proj. U 5208 (4), Dane Co.; LB $507,150, Contract 1, base, c. conc. 6.411 mi. U. S. Hy. 14, Projs. F 08-2 (19) and T 08-2 (10), Vernon Co.;

Wis.—The White Constr. Co., 710 N. Plankinton Ave., Milwaukee, Wis., LB, $93,628, Contract 1, b. conc. 3.603 mi. S. T. H. 50, Proj. T 013-1 (7) Kenosha Co.;

Wis.—Payne & Dolan of Wisconsin, Inc., 735 N. Water St., Milwaukee, Wis., LB $105,847 Contract 1, b. conc. 5.4 mi. S. T. Hy. 75 and Institution Roads, Proj. T 0484 (2) and N 0-6 (43), Racine Co.;

Wis.—Reliance Constr. Co., 1011 S. 8 St., Sheboygan Wis., LB $108,302. Contract 1, b. conc. 1.751 mi. U. S. Hy. 141, Proj. T 610 (2) and T 6105 (1), Sheboygan Co. Bids Apr. 26. CD 4/8.

L & L Service Co., 4445 N. 124 St., Milwaukee, Wis., LB $163,583, sanitary sewers in Bradley Estates GRANVILLE, WIS. Town of Granville, 7717 W. Good Hope Rd., Milwaukee, Wis. Bids Apr. 26. CD 4/18.

Joe Poeschl Inc., 6502 W. Medford Ave., Milwaukee, Wis., CA, $79,734, crushed stone paving W. Birch Court, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Apr. 22, awarded Apr. 26. CD 4/20.

▲† **Hoyle-Newberg Co.**, Iron Mountain, Mich. LB $1,437,000. central heating plant, water and sewer utilities, K. I. Sawyer Air Force Base, MARQUETTE, MICH. U. S. Eng., 600 E. Jefferson Ave., Detroit, Mich. Bids Apr. 26. CD 3/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Kenard Homes, Inc.**, 3634 E. Broad St., Columbus, O. Owner Builds. $2,500,000. 140 HOMES in Marabar Heights Development, COLUMBUS, O. D. E. Scott, c/o owner, engr.

▲ **Scottwood Development Co.**, 1082 Ashburton St., Columbus, O. Owner Builds. $2,000,000. 125 HOMES, COLUMBUS, O. Tully & Hobbs, 582 Oak St., Columbus, O. archts.

▲ **George W. Lathrop & Sons, Inc.**, 1510 Montcalm St., Toledo, O., CA Est. $2,500,000. laminating PLANT addn., E. Broadway, 240 x 680 ft. with L-sect. 80 x 397 ft., aluminum siding on bldg. for storage and fabricating facilities, TOLEDO, O. Libby-Owens-Ford Glass Co., National Bank Bldg. Toledo, O.

C. E. Harlos Constr. Co., 219 W. 4 St., Bloomington, Ind., LB, $679,922, Rogers Elementary and McCalla Elementary SCHOOLS, LB $489,476, Rogers Elementary School only, BLOOMINGTON, IND. Bloomington Metropolitan School Dist., Bloomington, Ind., Bids Apr. 26. Mc Guire & Shook, 1400 Fletcher Trust Bldg., archts., and Bevington, Taggart & Fowler, 730 K of P Bldg., both Indianapolis, Ind., engrs. CD 2/16.

▲ **H. L. Cooper Corp.**, 2801 W. 9 St., Gary, Ind., Own Forces, $2,500,000. 130 HOMES and sewers, CROWN POINT, IND.

▲ **J. L. Simmons Co., Inc.**, Inland Bldg., Indianapolis, Ind., LB, $1,448,000 general contract 5 story wing, 104-bed HOSPITAL addn., INDIANAPOLIS, IND. Bd Trustees St. Francis Hospital, Churchman Ave., Beech Grove, Ind. CD 2/9/53;

Cooke Brothers, 233 Virginia Ave., Indianapolis, Ind., LB, $414,414, heating, ventilating and air-conditioning work (Indianapolis Hospital).

F. A. Wilhelm, 3914 Prospect St., Indianapolis, Ind., CA, $577,857, DORMITORY, LAFAYETTE, IND. Purdue University, Executive Bldg., West Lafayette, Ind. Bids Apr. 20. CD 4/6.

C. E. Vendley, St. Charles and Wolf Rds., Berkley, Ill., Own Forces, $560,000. 30 HOMES, BERKELEY, ILL.

▲ **Central Constr. Corp.**, 1554 Kenilworth Ave., Calumet City, Ill., Own Forces, $3,300,000. 250 HOMES, CALUMET CITY, ILL. A. J. Del Bianco, 5501 Irving Park Rd., Chicago, archt.

Chicago Housing Authority, 608 S. Dearborn St., Chicago, 5, Ill., rejected bids Apr. 5, 41 row HOUSES, 47 and Princeton Sts., CHICAGO, ILL. Will re-advertise. CD 3/30.

▲ **Poirot Constr. Co.**, 2001 Pershing Rd., Chicago 9, Ill., CA, $2,000,000, 100,000 sq. ft. WAREHOUSE and railroad trackage, CHICAGO, ILL. Ferdinand Pulaski Corp., 500 N. Plaski St., Chicago, Ill. Bids Apr. 25, awarded Apr. 26. CD 4/19.

▲ **Wacker-Jackson Corp.**, c/o Loebel, Schlossman & Bennett, archts., 430 Michigan St., Chicago, Ill., CA, $4,000,000, 14 story OFFICE, Jackson Blvd. and Wacker Dr., CHICAGO, ILL. American Fore Insurance Group, 80 Maiden Lane, New York 38, N. Y.

Northland Constr. Co., 1190 Ridge Rd., Highland Park, Ill., Own Forces, $600,000, 25 HOMES area of Bob O'Link Golf Course, HIGHLAND PARK, ILL.

Crystal Homes, Inc., 134 N. La Salle St., Chicago 2, Ill., Own Forces, $900,000, 50 HOMES, MUNDELEIN, ILL.

▲ **Northlake Cement Co.**, 15 S. Wolf Rd., North Lake city, Ill., CA, $30,000,000, 2,000 HOMES, Baldwin, Rohlwig and Wilkes Rds., paving, sewers, water and SHOPPING CENTER, near PALATINE, ILL. Midland Enterprises, 2459 Peterson Rd., Chicago, Ill.

▲ **Smith & Dawson**, Prospect Heights, Ill., Own Forces, $1,600,000. 100 HOMES, PROSPECT HEIGHTS, ILL.

Earl Tinder, Ladysmith, Wis., CA, 1 story, 60x272 ft. straw-steel PAPER MILL addn., LADYSMITH, WIS. Peavy Paper Mills, Ladysmith, Wis.

▲ **S. M. Byrne Constr. Co.**, 3011 W. Burleigh St., Milwaukee, Wis., CA, Est. $1,000,000 general contract 6 story, 60 x 214 ft., and one 1 story, 50 x 75 ft. HIGH SCHOOL addns., MILWAUKEE, WIS. Plus XI High School, 135 N. 76 St., Milwaukee, Wis. CD 9/28.

▲ **Lerner-Linden Constr. Co.**, 21701 Republic St., Oak Park, Mich., LB $853,854. general contract, Total $1,123,325. junior High SCHOOL, Community Field, Mich. 54-C-414 AA, BERKELEY, MICH. CITY, E. G. Carlson, secy., Bd. Educ., 2325 Catalpa St., Berkeley, Mich. Bids Apr. 26. CD 4/7.

▲ **Prudential Investment Co.**, 1418 Cadillac Tower, Detroit, Mich. Owner Builds. $10,000,000. 800 HOUSES, Gratiot and Nunneley Rd., CLINTON, MICH.

Kowalski Sausage Co., Inc., 2240 Holbrook St., Detroit, Mich., rejected bids Apr. 22, sausage plant addn., alterations, Holebrook Ave., DETROIT, MICH. CD 4/20.

Musselman Realty Co., 314 Abbott Rd., East Lansing, Mich. Owner Builds. $670,000. Sparton Manor, 59 HOMES, Abbott Rd., EAST LANSING, MICH.

Foster-Schermerhorn-Barnes, 701 S. Holmes St., Lansing, Mich. LB $355,300. first unit Bingham SCHOOL, LANSING, MICH. City, Bd. Educ., 419 N. Capitol St., Lansing, Mich. Elmer Manson, 517 N. Washington St., Lansing, Mich., archt. Bids Apr. 26.

W. E. Wood Co., 4649 Humbolt St., Detroit, Mich. CA $629,470. general contract, osteopathic HOSPITAL, MOUNT CLEMENS, MICH. Mount Clemens Hospital, B. Burbridge pres. Bd. Trustees, Mount Clemens, Mich. CD 4/28, under LB.

Miller Thompson Constr. Co., 20958 Grand River St., Detroit, Mich. CA Est. $500,000. CHURCH, ROYAL OAK, MICH. First Congregational Parish, 130 W. Third St., Royal Oak, Mich. Bids Apr. 15. CD 3/31.

Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa., CA design and construct BOILER and AIRCOMPRESSOR FACILITY at Chassis Parts Division expansion, STERLING, MICH. Ford Motor Co., 300 Schaefer St. Dearborn, Mich. CD 2/16.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Tex., Houston**—AIR CONDITIONING—BA About 5/17—U.S. Eng., P.O. Box 1229, Galveston, air conditioning USAR Center Garage Bldg., ENG-41-243-55-65. Under $100,000.

† **Ia., Manchester**—TANKS, etc.—BA 5/19—Fish & Wildlife Service 1006 W. Lake St., Minneapolis, Minn., rearing tanks and raceways, U.S. Fish Cultural Station, FW3-2605.

Kan., Wichita—BA 5/19—Purcell Utilities Co., 2831 E. Central St., exten. sewer lines and sewage plant imprvs. $90,000. Ediger Eng. Co., 252 Laura St., engr. CD 10/6/54, under LB.

† **Neb., Fort Crook**—CRASH and FIRE STATION—BA 5/20—U. S. Eng., 1709 Jackson St., Omaha, crash and fire station in Bldg. 306, Offutt Air Force Base, Inv. 25-066-55-93.

† **Tex., Lubbock**—COLD STORAGE—BA 5/20—U. S. Eng., Box 1538, Albuquerque, N. M., cold storage, appurtenances, Reese Air Force Base, ENG-29-005-55-102. $100,000. CD 4/20.

† **Texas**—BA 5/23—Soil Conservation Service, 1st Natl. Bank Bldg., Temple, (74-55) floodwater retarding structures and earthfill embankments on Brady Creek, tributary of Middle Colorado River watershed, incl. clearing, grubbing, place embankment, spillway, concrete, etc. Site 44, near Brady, McCulloch Co.

† **Ark., Jacksonville**—NCO CLUB—BA About 5/24—U.S. Eng., P.O. Box 867, Little Rock, NCO club bldg., Little Rock Air Force Base, ENG-03-050-55-93.

† **Neb., Lincoln**—FIRE STATIONS—BA 5/24—U. S. Eng., 1709 Jackson St., Omaha, fire station, supply and issue bldgs., dental clinic, Lincoln Air Force Base, Inv. 25-066-55-96. CD 4/27.

▲ **OKLAHOMA**—BA 5/24—Oklahoma Turnpike Auth., 100 N.E. 23 St., Oklahoma City,

Ottawa Co—four-lane turnpike bridge over Neosho River near Miami, $1,150,000.

Rogers Co.—four-lane turnpike bridge over Verdigris River near Catoosa, $985,000. DeLeuw Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., engrs. CD 3/23/54, under Streets and Roads.

▲ **OKLAHOMA**—BA 5/24—Oklahoma Turnpike Auth., 100 N.E. 23 St., Oklahoma City,

Craig Co.—grade, drainage 6.56 mi. east of Vinita, $670,000.

grade, drainage 3.081 mi. west of Vinita, $315,000.

Rogers Co.—grade, drainage 2.65 mi. at Claremore, $275,000. DeLeuw Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., engrs. CD 3/23/54.

† **Tex., El Paso**—ELECTRICAL CHANGES—BA About 5/25—U.S. Eng., P.O. Box 1538, Albuquerque, N. M., electrical changes to interior of existing hangar, incl. bus ducts, outlets, wiring, misc. electrical work. Biggs Air Force Base, ENG-29-005-55-107.

† **N. M., Roswell and Tex., El Paso**—STORAGE FACILITIES—BA About 5/26—U. S. Eng., P.O. Box 1538, Albuquerque, N. M., storage facilities for ordnance storage area, Walker Air Base and Biggs Air Force Base, Tex., incl. one 20x40 ft. gate house; one 52x52 ft. storage bldg.; 30x48 ft. auxiliary power plant, 40x120 ft. maintenance and inspection bldg., all of masonry constr., 5 earth covered, concrete storage igloos; hot mix paving, water, sewer, electrical work, ENG-29-005-55-106. CD 8/28/51.

† **Arkansas**—BA 5/26—U. S. Eng., P. O. Box 60, Vicksburg, Miss., drilling water wells in Blakely Mountain Reservoir Area, Garland and Montgomery Counties.

† **Ark., Jacksonville**—CLUB—BA About 5/27—U. S. Eng., P.O. Box 867, Little Rock, airmen's club, Bldg. No. 3A, Little Rock Air Force Base, ENG-03-050-55-113.

† **Minn., Grand Rapids**—BA About 5/27—U. S. Eng., 1217 Post Office & Custom House, St. Paul, weather station, Swan River, SM-138, ENG-21-018-55-3. (Correction-location). CD 4/27.

† **N. M., Albuquerque**—SWIMMING POOL, etc.—BA About 5/27—U. S. Eng., P.O. Box 1538, Albuquerque, 70x120 ft. rein.-con. swimming pool; 42x90 ft. masonry bathhouse, Kirtland Air Force Base, ENG-29-005-55-94. CD 2/19/54.

Mo., St. Louis—BA 5/31—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, furnishing, installing electrical low-service pumps for Chain of Rocks pumping station, St. Louis Water Division on Mississippi River to have combined treated capacity of 450,000,000 gal. per day, $235,000. CD 12/18/52.

† **Missouri**—BA About 6/2—U. S. Eng., P. O. Box 867, Little Rock, Ark., relocating cemeteries, Table Rock Reservoir Area, White River Watershed, Serial No. CIVENG-03-050-55-51. CD 7/16.

▲ **Tex., Wylie**—BA 6/7—North Texas Municipal Water Dist., Wylie, constr. 20 m.g. water treatment plant. Over $1,000,000. Plans deposit $25. Forrest & Cotton, 803 Praetorian Bldg., Dallas, engrs. CD 12/3.

† **N. M., Clovis**—HOUSING—BA On Or About 6/8—U. S. Eng. Contracting Office, Clovis Air Force Base, Clovis, 175 standard family housing units, Clovis Air Force Base, No. 29-605-55-56 "B". Plans deposit $25. CD 10/23/51.

▲ **Tex., Dallas** — AIRPORT TERMINAL — BA 6/10 — City, City Hall, Main and Harwood Sts., 4 story airport terminal for Love Field. $5,000,000. Plans deposit $100. Broad & Nelson and Jack Corgan, 918 Reserve Loan Life Bldg., archts. CD 4/20/54.

† **South Dakota** — SUB-STATION GARAGE, etc. — BA 6/14—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver 2, Colo., garage and warehouse for Sioux City sub-station, Transmission Div., Missouri River Basin Proj., Spec. DC 4414. CD 5/25/44.

† **South Dakota**—SWITCHBOARD PANEL, etc.—BA 6/16—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnish, del. f.o.b. cars shipping point or f.o.b. cars Lake Andes, S. D. for Schedule 1, Item 1; and Huron, S. D. for Schedule 1, Items 2 and 3; Schedule 1, Item 1, one vertical switchboard panel for Fort Randall Power Plant; Item 2, one telemeter transmitter with recorder and accessories for Granite Falls sub-station; Item 3, one telemeter transmitter with recorder and accessories for Sioux Falls sub-station, Transmission Div., Missouri River Basin Proj., Inv. DS-4419. CD 5/25/44.

Tex., Houston—Bids Asked—Briargrove Land Co., c/o R. L. Phillips & D. F. Biven, Almeda-Genoa Rds., storm sewers, $80,000; sanitary sewers, $90,000.

BIDS ASKED—BUILDINGS

Minn., Anoka—SCHOOL—BA 5/17—Bd. Educ., Anoka-Hennepin Independent School Dist. No. 220, R. K. Nelson, clk., 1 story, grade school east of Crooked Lake Rd. between Main St. and Hy. 10, Coon Rapids. $350,000. Plans deposit $25. Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, archts.

▲ **Minn., Duluth** — SCHOOL — BA 5/19 — Bd. Educ., H. J. Forsberg, clk., 225 N. First Ave. E., Ordean Junior High School, 40 Ave. East and Superior St. $1,400,000. Plans deposit $20. T. J. Shefchik, 308 Lonsdale Bldg., archt. CD 12/30.

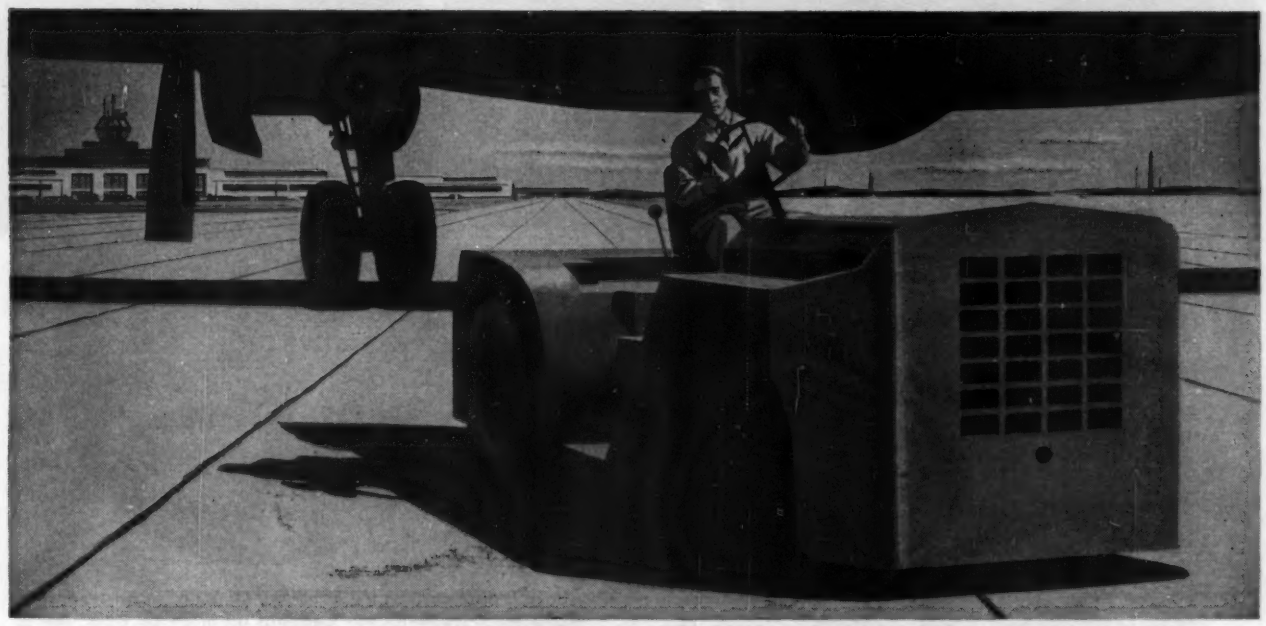
Mo., St. Charles—BA 5/19—Interparish Catholic High School c/o Msgr. A. T. Strauss, pastor, St. Peter's parish and Rev. James V. Fallon S. J., pastor St. Charles Borromeo Parish, 324 S. 3 St., 1 story, 64x344 ft., 80x125 ft., 45x122 ft., 41x111 ft. brick high school, on 41-acre tract Elm St. west of city limits. Extended date. A. F. and Arthur Stauder, 3608 S. Grand Blvd., St. Louis 10, Mo., archt. CD 3/21.

Minn., Mabel—SCHOOL—BA 5/20—Bd. Educ., Mrs. Odell Lee, clk., school addn., remodel existing bldg.

(Continued on page 131)

For rolling pavements

or towing planes



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In the Galion Roll-O-Matic roller, TORQMATIC power transmission provides a complete hydraulic cushion that makes for really smooth pavements. It means no gears to shift, quicker pickup, 10% more work per day with fuel consumption cut as much as 25%.

And in the Unitow Industrial Tractor it means smoother, steadier towing of huge bombers and commercial planes —that will not damage even the most fragile nose-wheel strut.

Allison's small, compact, *completely self-contained* 200-300 Series TORQMATIC Converters fit *both* gasoline and Diesel engines in the 40 to 150 horsepower range. They bring shock-free power transmission to a wide range of equipment—protect the entire drive line from harmful shock loads. They more than *triple* engine torque—broaden the engine's working horsepower range.

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You can *specify* Allison TORQMATIC Converters or Transmissions in a wide range of equipment from road rollers to giant off-highway trucks. Ask your equipment dealer or manufacturer about TORQMATIC DRIVES next time you buy, or write direct for more complete information. Allison Division of General Motors, Box 894E, Indianapolis 6, Indiana.

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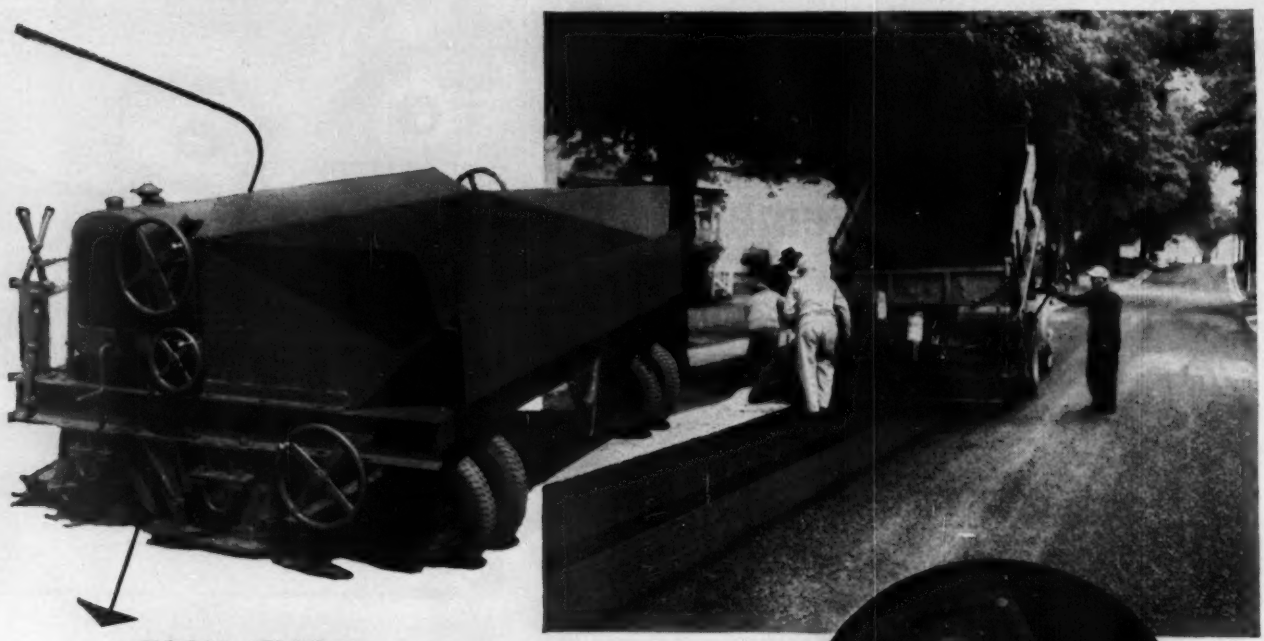

TOW TYPE

NO OTHER BITUMINOUS PAVER BUILT LIKE THIS!

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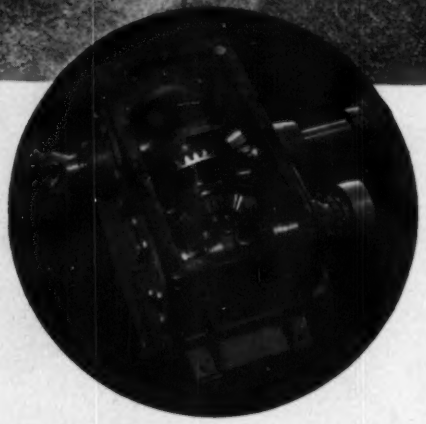
The Adnun Jr. is a far advance over the ordinary wheel mounted hopper.

Here is a machine that will give you many years of service. Look at the rugged frame! Every bearing is an anti-friction bearing! Oscillating Screed is cut from the plate. Hopper is heavy gauge steel. Engine power moves empty paver and saves truck time ordinarily wasted on relocation. Dual Controls make operation easy from either side. Such a unit means lower cost operation, fewer repair bills and a better job.

Send back the card for the new Adnun Jr. catalog and more details.



Above is gear case on the Adnun Jr. Gears have cut teeth and shafts run on anti-friction bearings all in an oil bath. This is typical of the high type design of the Adnun. It costs more to build but it pays out in less trouble on the job.

No other Black Top Paver gives you the wide range of service that is possible with the Adnun Sr. It lays any type of asphaltic mix, hot or cold. No other paver can lay as narrow a course and no paver lays anything wider. It is quickly equipped as a stone spreader and with Continuous Course Correction and the Fluid Level it lays to an accuracy unequalled by any other machine on the market.

ADNUN JR
MODEL 8
BLACK TOP PAVER

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
1922 State Street
Nunda, New York

BLAW-KNOX

(Continued from page 128)

$380,000. Extended date. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 4/12.

▲† **Tex., Texarkana** — AMMUNITION MAINTENANCE FACILITIES—BA 5/25—U. S. Eng., Box 61, Tulsa 2, Okla., ammunition maintenance facilities, Red River Arsenal, Red River Div., a central steam plant, ENG-34-066-55-102. $750,000-$1,750,000. CD 9/11/53.

† **Iowa, Hinton**—GARAGE, etc.—BA 6/14—Bureau Reclamation, Dpt. Interior, Huron, S. D., garage and warehouse for Sioux City Sub-station, Missouri River Basin Proj., Transmission Div., Spec. DC 4414. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr.

SOON LETS CONTRACT—BUILDINGS

Kan., Baxter Springs—OVERHAUL BASE—Yellow Transit Truck Line Co., Baxter Springs, soon lets contract overhaul base, incl. warehouse, freighter dock, motor repair section, trailer repair shop, etc. $300,000. W. B. Fullerton, 15 W. 10 St., Kansas City, Mo., and E. C. McCamis, 1804 Swift St., Kansas City, Mo., archts. CD 1/18.

Kan., Kansas City—WAREHOUSE, etc.—General Electric Supply Co., 2101 Broadway, Kansas City, Mo., soon lets contract, 84,000 sq. ft. warehouse and office, 7 and Kindelberger Rds. $800,000. C. E. Keser, 609 Minnesota St., Kansas City, Kan., archt. CD 10/21.

Mo., Kansas City—LABORATORY—Westinghouse Electric Corp., Aviation Gas Turbine Div., P.O. Box 288, Kansas City, Mo., soon lets contract components development laboratory, 95 and Troost Ave. Alfred Benberg, 4550 Main St., Kansas City, Mo., engr.-archt. CD 12/22.

Neb., North Platte — HOSPITAL — Memorial Hospital (Lutheran Hospital & Home Society), North Platte, soon lets contract hospital. $450,000. John Latenser & Sons, 1307 Farnam St., Omaha, archts. CD 4/13.

Tex., Dallas—TEMPLE—Temple Emanu-EL, Harwood and South Blvd., soon lets contract, masonry Temple Emanu-EL, Hillcrest and NW Hy. $600,000. Howard R. Meyer, 2907 Maple Ave., and Max Sanfield, 3722 Bowser St., archts. Wm. W. Wurster, Dean of University of Calif., 405 Hilgard Ave., Los Angeles, Calif., consult. engr. CD 12/2/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

S. J. Groves & Sons Co., 500 Wesley Temple Bldg., Minneapolis, Minn. CA $517,466. concrete paving Wold-Chamberlain Field, MINNEAPOLIS, MINN. Minneapolis-St. Paul Metropolitan Airports Comm., R. Aldrich, exec. dir., 2429 University Ave., St. Paul, Minn. CD 3/30, under LB.

Chicago Bridge & Iron Co., 2101 McCormick Bldg., Chicago, Ill. LB $115,240, Alt. $127,300, furnish, erect 60 ft. water standpipe of about 2 m.g. capacity, alt. bids on 65 ft. standpipe, ST. PAUL, MINN. City, L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. Bids Apr. 26. CD 4/20.

F. Morettini, 1416 Maryland Ave. E., St. Paul, Minn. CA $189,944. furnish, install about 5,615 lin. ft. 30 in. water mains, etc., in Fourth St. from Cedar St. to Broadway, thence north on Broadway to Pine St., etc., ST. PAUL, MINN. City, L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. CD 4/28, under LB.

Lips Constr. Co., Princeton, Minn., CA, $268,253. telephone lines 409 mi., 4 exchanges, Princeton vicinity, MISSOURI, Grand River Mutual Telephone Co-operative, Princeton, Mo. Bids Mar. 22. CD 3/22.

† **Soil Conservation Service**, 56 Third St. S. E., Huron, S. D. rejected bids Apr. 19, grade stabilization, incl. drop inlets, anchors, drains, embankment, trench, outlet ditch, spillways, etc. near Alcester, Union Co., SOUTH DAKOTA.

† **Ace Constr. Co.**, 2110 S. 55 St., Omaha, Neb., LB $476,265. earthwerk and structures and sand canyon wasteway at second sect. Sargent Canal, near Sargent, Spec. 4378, NEBRASKA. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids Apr. 26. CD 3/23.

Kansas-Nebraska Natural Gas Co., Phillipsburg, Kan. Owner Builds. $75,000, lay temporary uncovered gas line from Peetz, Colo., through Cheyenne Co., Neb. NEBRASKA and COLORADO. CD 4/21/54.

Booth & Olson, Inc., 529 Insurance Exch. Bldg., Sioux City, Iowa, CA $119,711, paving and storm sewers, CRAWFORD, NEB. City, Crawford, Neb. Bids Apr. 25. CD 4/13.

† **San Ore Constr Co.**, P.O. Box 1621, Lincoln, Neb., LB $169,762, flexible pavement, calibration hardstand, Lincoln Air Force Base, Inv. 25-066-55-84, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids April 26. CD 4/11;
Abel-Dobson-Robinson Co., P.O. Box 1428, Lincoln, Neb. LB $162,860, rigid pavement, (Lincoln AFB, Neb.)

Arnold E. Swanson Co., Hastings, Neb., and **Edward Peterson Co.**, WOW Bldg., Omaha, Neb., LB $671,342. resurf. various streets, OMAHA, NEB. City, City Hall, 18 and Farnam Sts., Omaha, Neb. Bids Apr. 26. CD 3/9/53.

† **Dondlinger & Sons Constr. Co.**, 1128 E. Lincoln St., Wichita, Kan. LB $205,532. sewage plant, Inv. 23-028-55-65, FORT RILEY, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Apr. 12. CD 3/17.

▲ **OKLAHOMA**—Oklahoma Turnpike Auth., 100 N. E. 24 St., Oklahoma City, Zone 5,
J. W. Moorman & Sons, P.O. Box 3160, Muskogee, Okla., LB, $457,536, est. $581,911; grading, drainage 5.053 mi. Contract 106, Vinita, Mayes and Craig Counties; LB $671,099, est. $603,989, grading, drainage 2.683 mi. Contract 104, Vinita, Mayes Co.; LB $270,812, est. $321,358, grading, drain-

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The GILSON Mechanical Testing Screen provides an accurate check on sizing specifications for crushed stone, gravel, slag, coal, ores, and all similar materials.
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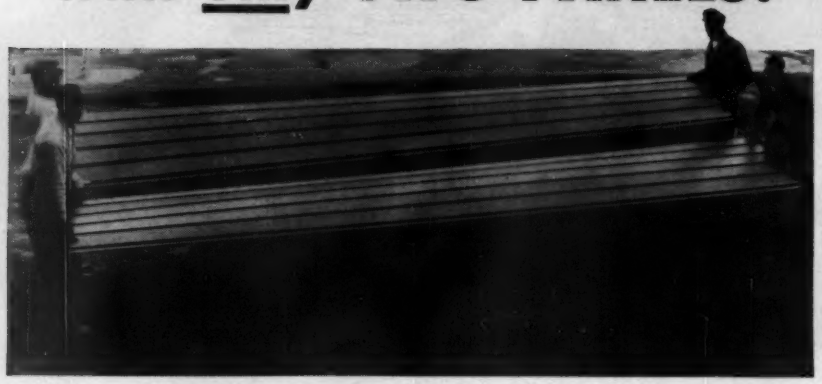
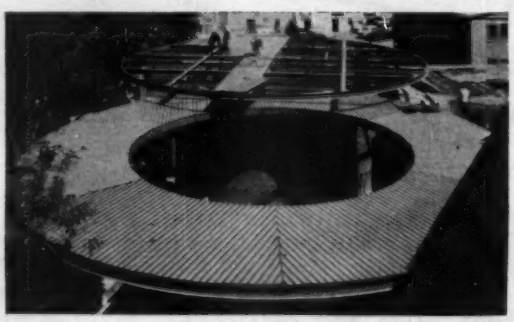


Speed Roof Construction . . . Cut Costs with Longer, Wider

AIRTHERM DECKING

Now Airtherm Steel Roof Deck is available in 20-foot, 4-inch lengths, 30 inches wide (the widest roof deck made). It takes only two panels to cover a full 100 square feet. Erection is faster because the reduced number of joints require fewer welds.



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18-Gauge Airtherm Roof Deck	Properties
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For more complete information consult our catalog in Sweet's Architectural File 2dAi, or write . . .

West Coast Office: 190 MacArthur Boulevard, Oakland 10, California

age 2.437 mi. Contract 107, Northeast Turnpike, Vinita, Mayes Co. Bids Apr. 26. CD 3/29.

Mantooth Constr. Co., Purcell, Okla., LB $87,060, est. $85,000, earthen dam, Oil Creek, near ARDMORE, OKLA. C. B. Goddard & Son, Ardmore, Okla. Freese & Nichols, 407 Daniger Bldg., Fort Worth, Tex. engrs.

Langley Constr. Co., 2400 N. Lewis St., Tulsa, Okla., CA, $173,514, outfall sewers, sewage disposal plant, SAND SPRINGS, OKLA. City, Sand Springs, Okla. Bids Mar. 16. CD /32.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—W. Paul Carlisle & Uvalde Constr. Co., 6434 Orchid Lane, Dallas, Tex., CA $1,264,870, c. conc. pavement, flexible base, two course surf. tr. 7.442 mi. Hy. US 67, Proj. IN 431 (11), Hopkins Co.;

Tex.—Constructors, Inc., P.O. Box 18013, Houston, Tex., CA $560,882, c. con. 0.939 mi. Hy. US 90, Proj. IN 1039 (8), Harris Co. Bids Apr. 20. CD 4/25, under LB.

TEXAS—State Hy. Comn., Austin,

R. C. Buckner, P.O. Box 609, Jacksonville, Tex., CA $513,854, 1.032 mi. Sabine River Bridge and approach, grading, structures, flexible base, b. conc. pavement 1.032 mi. Hy. US 270, Proj. F 147 (16), Gregg Co. Bids Apr. 20. CD 4/25, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Cage Bros., 6959 San Pedro St., San Antonio, Tex., CA $2,082,447, concrete base, hot mix b. conc. 6.729 mi. Hy. US 81 and SH 346, Proj. UI 264 (17), etc. Bexar Co.;

Tex.—Olene Hanson, 4906 Griggs Rd., Houston, Tex., CA $592,493, flexible base, b. conc. 7.327 mi. Hy. US 75, Proj. IN 519 (16), Harris Co.;

Tex.—Pelphrey-Farquher, Inc., 1412 Electric Bldg., Fort Worth, Tex., CA $824,778, grading, structures 10.398 mi. Hy. US 81, Proj. IN 113 (16), etc., Hill Co.;

Tex.—Strain & Brown, Inc., P.O. Box 1057, San Angelo, Tex., CA $661,129, pavement wid'n. and hot mix b. conc. 20.398 mi. Hy. US 70, Proj. F 540 (3), etc. Foard Co. Grand total $4,160,847. Bids Apr. 19. CD 4/25 under LB.

Panola-Harrison Electric Co-operative, Marshall, Tex. Own Forces. $95,000, 35 mi. rural distr. lines, Panola and Harrison Counties, TEXAS.

▲† **F & C Engineering Co.**, 3018 Leeland St., Houston, Tex., LB $1,370,059, Proposal 1, for runway and taxiway extens., apron strengthening and airfield lighting, ENG-41-243-55-56, ELLINGTON AIR FORCE BASE, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Apr. 28, CD 3/29;

McCarthy Imprvt. Co., Genoa, Tex., LB $1,700,572, Proposal 2; LB $2,647,000, Proposal 4 (Ellington AFB);

Austin Road Co., 1000 Singleton Blvd., Dallas, Tex., LB $2,270,785, Proposal 3, (Ellington AFB).

Cain, Brogdon & Cain, 2333 Grafton St., Fort Worth, Tex., LB $152,200, est. $170,000. recreation center, Sycamore Park, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Apr. 21. CD 4/13.

† **Horace O. Duncan**, 2917 Bryan St., Fort Worth, Tex. LB $163,654, est. $151,790, constr. tech. training bldg., Air Force Reserve Specialist Training Center, ENG-41-443-55-118, FORT WORTH, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Preston M. Geren, 1607 Fort Worth Natl. Bldg., Fort Worth, Tex., archt. Bids Apr. 27. CD 4/13.

Austin Road Co., Box 1590, Austin, Tex., LB $192,943. est. $215,000, sanitary sewerage sys., incl. 56,550 lin. ft. 6- to 27-in. rein.-con. pipe laying; three lift stations; 163 standard manholes, etc., HOUSTON, TEX. Harris County Fresh Water Supply Dist. 26, 406 Scanlan Bldg., Houston, Tex., Frank J. Metyko, 406 Scanlan Bldg., Houston, Tex., engr. Bids Apr. 28.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $88,165, concrete paved streets, curb and gutter, areas of Deer Park and Pasadena, HOUSTON, TEX. Sterling Hogan, Sr., & Oscar Holcombe, 1st Natl. Bank Bldg., Houston, Tex.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $49,115, water lines, facilities, HOUSTON, TEX. Sterling Hogan, Sr. & Oscar Holcombe, 1st. Natl. Bank Bldg., Houston, Tex.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $75,000, natural gas line areas of Deer Park and Pasadena, HOUSTON, TEX. Sterling Hogan, Sr. & Oscar Holcombe, 1st. Natl. Bank Bldg., Houston, Tex.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $77,000, storm sewers; CA $81,000, sanitary sewer collection lines, areas of Deer Park and Pasadena, HOUSTON, TEX. Sterling Hogan, Sr. & Oscar Holcombe, 1st. Natl. Bank Bldg., Houston, Tex. CD 1/26.

Mischer-Harris Co., Inc., 6925 Navigation Blvd., Houston, Tex., CA $49,000, bldg. area earthwork, grading areas of Deer Park and Pasadena, HOUSTON, TEX. Sterling Hogan, Sr. & Oscar Holcombe, 1st Natl. Bank Bldg., Houston, Tex.

H. D. Gillis Co., Daingerfield, Tex., LB $77,967, est. $80,000, sanitary sewerage sys., JUSTIN, TEX. City, c/o mayor, Justin, Tex. Joe J. Rady, 511 Insurance Bldg., Fort Worth, Tex. engr. Bids Apr. 28.

† **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex. LB $391,424, est. $500,000-$1,250,000. maintenance hangar and communications, operations bldg. and appurtenances, utilities, etc. Brooks Air Force Base, ENG-41-243-55-50, SAN ANTONIO, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Apr. 22.

† **B. W. Rose Constr. Co.**, 2608 Rand St., Fort Worth, Tex., LB $103,272, est. $93,620, auditorium theatre, Connally Air Force Base, ENG-41-443-55-111, WACO, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Apr. 27. CD 4/13.

Flora Constr. Co., 56 and Holly Sts., Denver, Colo., CA, $131,709, power line extens., incl. 115.7 mi. power line conversion and new constr. between Granger and Farson, WYOMING. Bridger Valley Electric Co., Mountainview, Wyo. Bids Mar. 29. CD 3/16.

(Continued on page 136)

Two 16-yd. scrapers move 76,000 pay yds. in 25 days

Owner says, "Far superior to any other machine!"

The scrapers which earned such praise are the 2 C Tournapulls pictured above. Their owner is S. P. Lightholder of Canonsburg, Pennsylvania. The job was a 1750′ runway extension at the County Airport in Washington, Pa. — and it wasn't an easy one . . .

Material mostly shale, clay

Most of the 381,000 yards involved had to go into one 59 ft. fill. Base of the fill was shale and stratified limestone, 640 ft. wide and 1750 ft. long. Then came layers of gumbo and heavy clay . . . then a loam-top dressing 300 ft. wide and 1750 ft. long. For all this dirtmoving, only 150 days was allowed.

To Contractor Lightholder, this tight time schedule called for only a 130 hp crawler-tractor for push-loading and the two 16-yard Tournapulls.

His choice soon proved an excellent one.

Job ahead of schedule

In spite of rain which fell 5 of the first 11 working days, each Tournapull regularly completed a typical hilly 3000′ cycle every 4½ minutes. Loads in the wet mixed clay, shale, and limestone averaged 13½ to 14½ pay yards . . . combined output for the 2 sideboarded "C's" averaged 22 loads (297 to 319 pay yards) per 50-minute hour.

At the end of the first 11 days, total dirtmoving was accurately measured. Cross-sections showed that in the 99 working hours, the 2 C Tournapulls had delivered 34,400 cubic yards of fill. The job was well ahead of schedule!

At the 25-day point, when our photographer visited Washington, another estimate was taken. The two units then had moved 76,000 cubic yards. This pace was continued, and the work finished well within the allotted time!

Here's what the owner has to say:

Is it any wonder that Owner Lightholder, commenting on this performance, says, "Tournapulls are far superior to any machine I've ever owned or seen in action!" Let us show you a Tournapull in action to prove this statement! There's a size to fit your needs.

Rubber-tired C Tournapulls can travel over open country or paved roads at speeds to 30 mph. Owner S. P. Lightholder makes good use of this speed and roadability to take on small jobs that build extra earnings. One time during a lull in the airport job, he sent a "C" 58 miles to Greensboro, Pennsylvania, roading it over regular highways, to haul refuse and slate from a power company's coal washing plant. "The features on the C Tournapull make it an all-purpose tool," says Owner Lightholder.

Tournapull-Trademark Reg. U.S. Pat. Off. P-722-A-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Tournatractor quickly cleans mine floor. Operator makes effective use of rig's instant-shift, constant-mesh transmission to doze and back away in a hurry. Big tires provide plenty of flotation and traction, have good durability despite the abrasive, rocky footing. Unit works 24 hours a day, 7 days a week, helps on both stripping and ore removal.

Iron mine in New York puts 19 mph speed on cleanup work

- **Rubber-tired tractor clears mine-floor after blasting**
- **Rig also cleans up around 4½-yd. shovel**
- **In winter, plows snow from haul roads and blast areas**

With drilling and blasting done throughout the day along an ore body two miles in length, this New York open-pit iron mine has a major cleanup problem. They have licked the problem with the speed and maneuverabilty of a rubber-tired Tournatractor.

On the relatively long runs between operating faces, this 19 mph rig makes a much faster trip than could a crawler-tractor. Another advantage of Tournatractor is that it does not cut-up the surface of the haul roads like a crawler does.

During winter, Tournatractor also finds time to plow snow from the pit roads and loading areas. It also clears areas to be blasted. This keeps snow from getting mixed in with the shot rock and later from causing trouble inside the crushers.

"Excellent on night shift"

For work on the night shift, owners are particularly pleased with the lights on their Tournatractor. They find that "night work does not slow this rig nor put any limitations on areas where it can travel or work."

For proof of these advantages, ask for a demonstration *in your pit* of this high-speed 208 hp machine. See for yourself how quickly and how economically it will handle your scattered pushing, pulling and dozing jobs.

The ore body being mined here was discovered in 1810 by engineers surveying a military road between Albany and Ogdensburg. Only a small amount of iron was removed, however, until 1944 when modern methods of beneficiating magnetite and low-grade non-magnetic martite ores made the operation profitable. This year, 1,300,000 gross tons will be processed. All will be taken from a deposit slightly over 2 miles long and 200′ to 1400′ wide. Iron content averages 24%. Overburden includes a structural hanging wall of granetized gneiss, plus up to 60′ of glacial drift (mostly sand, hardpan, and boulders). Height of operating faces is set at 50′ except for some first cuts of 100′. Drilling is made with 42-T and 50-T churn drills, with chrome-nickel-moly bits of 4340 grade. Nine-inch primary holes are spaced about 23′ apart and burden at toe is kept as close to 20′ as possible. Every pound of explosive breaks about 2.35 gross tons of crude ore. This is loaded by 4½-yd. shovels into 22-ton rear-dumps and transported to the 54 inch primary crusher. Rock chunks too big to pass the 4½-yd. dipper (about 1 chunk per 40 tons of crude ore) are reduced to handling size by a 4-ton drop ball handled by a truck crane.

Tournatractor—Trademark T-751-M-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

One 7-yd. scraper does all dirtmoving for 300-unit subdivision

- self-loads
- cuts ditches
- levels lots
- grades streets

JOHN GROSSO Drainage and Excavating Company, Kankakee, Illinois, handled all grading for the new 80 acre, 300 home Brunning Subdivision at Lockport with the one 7-yard D Tournapull pictured. The "D" did a wide variety of dirtmoving assignments—from digging drainage ditches, building terraces, and leveling lots to putting in streets, sidewalks, and ditches for water lines.

Compacts dirt on terraces

At time photos were taken, "D" was cutting down a ridge for house locations. Fill was made in a low spot where other houses would be built. "D" made fills to carry terraces... there was about a foot difference in terrace depth about every 75'. Rolling action of "D's" low-pressure tires adequately compacted each terrace and fill, eliminated need for roller.

Blades own haul road

Where cycles averaged 1800 to 2000 ft., the self-loading Tournapull averaged 12 trips (60 pay yards) per 50-minute hour. Cycle of 4¼ minutes included 1 minute to self-load 5 pay yards of hard clay, and 1¼ minutes on return leg to blade haul road.

Grades to within 1 inch

"This machine sure is easy to operate," says Erich Ohrt. "It gives you the accurate control you need on so many jobs. On waterway work, we have to cut to the inch and I can do that with the 'D'. Its got good brakes, too."

There's no end to the amount of work this small Tournapull can profitably do for you. It self-loads to handle small-yardage jobs alone ... works as a cleanup tool on big jobs ... has ample capacity (7 yds. heaped) and speeds (28 mph) to work profitably in pusher fleets.

See for yourself. We'll be glad to demonstrate a "D" on your job. Call to arrange time and place.

300 jobs in 4 years

Contractor John Grosso bought his first D Tournapull in April, 1951. After 3 seasons of round-the-clock use, it was traded in on the "D" pictured here. The two units together have completed over 300 separate jobs in the past 4 years.

Digs 2700' ditch in 2 days

In a typical season, one of the "D's", working alone, dug 70,000 feet of grass waterway for farmers around Lockport. A typical 2700-ft.-long, 1½ to 4-ft.-deep ditch took 2 days. A 2100-ft.-long, 1-ft.-deep ditch, sloped 32' wide at 12-to-1, took 8 hours. A waterway involving 7,000 cubic yards of dirt was completed in 72 hours. And an 80-acre land-leveling job for the National Gas and Storage Co. at Herscher, Ill., took only 3 months.

Cuts lube costs in half

Besides giving the advantages of high production, the "D's" have saved money on maintenance. Mr. Grosso says lubrication costs for each "D" have been less than half that of a crawler-tractor. The "D's" also use much less cable than a crawler, says Mr. Grosso, and their tire upkeep is far under track upkeep. Overall mechanical efficiency has been high; operator Erich Ohrt says the newer Tournapull lost only 3 *hours* of working time in 11 *months*.

Drives 65 mi. at 26 mph

Another advantage of D Tournapulls is their ability to drive job-to-job under their own power. Grosso's "D's" average 20 to 28 mph in traffic. One typical trip — St. Anne, Illinois, to Lockport — took 2½ hours for 65 miles. On this trip, and all others, the "D" towed a pick-up truck (which contains greasing equipment, oil drums, tools, etc., and provides operator with a way of transportation home after his day's work.)

"Long time before 'D' is beat"

Concludes Grosso, "I grew up with dirtmoving equipment and have seen them all perform. I think it will be quite a long time before a Model D Tournapull can be beat!"

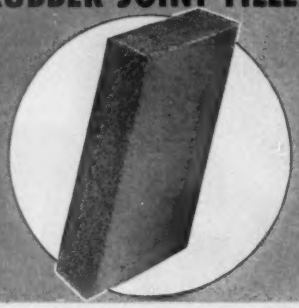
Tournapull—Trademark Reg. U.S. Pat. Off. DP-726-B-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Servicised Cementone Sponge
RUBBER JOINT FILLER



- Matches Color of Concrete
- Fully Resilient . . . Non Extruding

Servicised Cementone Gray Sponge Rubber Expansion Joint meets the need for an inconspicuous joint filler for architectural concrete. Can be supplied in various degrees of compressibility to meet your requirements. Made in widths to 24" and lengths to 10 ft.

Write for details and the complete Servicised Catalog today. There is no obligation. See SWEET'S Catalog.

SERVICISED PRODUCTS CORP.
6051 W. 65TH ST. • CHICAGO 38, ILL.

Sound Powered TELEPHONES work in any emergency because they NEED NO CURRENT

If everything else fails, these phones will still provide trouble-free performance over a distance of many miles. Speaking is activated solely by the sound energy of the voice while ringing is accomplished by a hand-driven magneto. For permanent installation on industrial projects or for temporary use on construction work where they can be moved as the job progresses.

INDOOR AND OUTDOOR MODELS

In selective or common ringing and semi-selective or common talking. Cost of upkeep is negligible.

Write for illustrated catalog

HOSE-McCANN TELEPHONE CO., INC.
761 THIRD AVENUE
BROOKLYN 32, N. Y.

(Continued from page 132)

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver.

Dominic Leone Constr. Co., Trinidad, Colo. CA, **$169,886**, est. $183,023. stab., plant mix asph. surf. 4.781 mi. State Hy. 76, west of Pueblo, Pueblo Co., Proj. S 0037 (1). Bids Apr. 26. CD 4/18.

† **U. S. Govt. Dpt. of Air Force**, Pentagon Bldg., Wash., D. C., cancelled bids to have been opened May 25, grading, relocation of U. S. Hy. 85-87 control of Kettle Creek and clearing, grading airfield area, COLORADO SPRINGS, COLO. CD 4/13.

Western Paving Constr. Co., 5105 Washington St., Denver, Colo., CA, **$138,143**, est. $125,000. Street paving District No. 1015, c. conc. curb, gutter, sidewalk, gravel base, b. conc. paving, DENVER, COLO. City and Denver Co., City & County Bldg., Denver, Colo. Bids Apr. 20, awarded Apr. 21. CD 4/13.

United Concrete Pipe Co., Pleasantville, Utah, CA, **$436,380**. furnishing 88,000 ft. 18 and 20 in. pipe for ww. sys., GRAND JUNCTION, COLO. City, City Hall, Grand Junction, Colo. Bids Apr. 20, awrded Apr. 21. CD 2/24.

Rippey & Sons, Newcastle, Colo., CA **$96,859**, est. over $73,000. sanitary sewerage collection system and sewage treatment oxidation ponds NUCLA, COLO. Nucla Sanitation Dist., Town Hall, Nucla, Colo. Bids Apr. 15, awarded Apr. 26. CD 3/31.

Schmidt Constr. Co., 8150 W. 48 St., Arvada, Colo., CA, **$72,157**, sewer lines 5 mi., STRASBURG, COLO. Strasburg Water & Sanitation District, Strasburg, Colo. Bids Apr. 16, awarded Apr. 26. Coberly & Leffel, Engineers, Inc., 7190 W. 38 Ave., Denver, Colo., engr.-archt.

BUILDINGS

LOW BIDS AND CONTRACTS

J. P. Melberg & Assoc., 816 Second Ave. S., Minneapolis, Minn. **P. L. Thielman**, assoc., St. Cloud, Minn. Owner Builds. **$750,000**. 1 story, 330 ft. long SHOPPING CENTER, ST. CLOUD, MINN.

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Mo., Owner Builds, **$1,000,000** 10 story APARTMENT, Dunleith Towers, 46 and Jefferson Sts., KANSAS CITY, MO.

Emery Constr. Co., 2133 Potomac Drive, Topeka, Kan. Owner Builds. **$480,000**. 24 DUPLEXES, 29 and Frederick Blvd., ST. JOSEPH, MO.

McCarthy Bros. Constr. Co., 4903 Delmar Blvd., St. Louis 8, Mo. CA **$614,540**. 8 story bsmnt., rein.-con., brick, steel women's DORMITORY, 3811-15 West Pine Blvd., ST. LOUIS, MO. St. Louis University, Very Rev. Paul C. Reinert, S. J. pres., 221 N. Grand Blvd., St. Louis 3, Mo. CD 4/26, under LB.

† **Fleischer-Seegar Constr. Co.**, 4900 Washington Ave., St. Louis 8, Mo. LB **$397,170**. rehabilitation, modification of BUILDING No. 111 St. Louis Ordnance Plant, vicinity of 4300 Goodfellow Blvd., ST. LOUIS, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Apr. 27. CD 3/25.

▲ **J. E. Pyle Contr. Co.**, 400 E. McDaniel St., Springfield, Mo. CA, **$1,123,029**, general contract, Parkview HIGH SCHOOL, Campbell St., SPRINGFIELD, MO. Springfield Reorganized School District No. 12, Bd. Educ., 940 N. Jefferson St., Springfield, Mo. Bids Mar. 9. CD 3/22, under LB.

▲ **J. L. Seyler**, 4608 E. 10 St., Topeka, Kan. Owner Builds. **$1,000,000**. 72 DWELLINGS, Fairlawn Manor No. 2, bounded by 17 and 19 Sts., TOPEKA, KAN. M. L. Thomas, 1109 Topeka St., Topeka, Kan., archt.

▲ **Manhattan Constr. Co.**, 1804 Classen St., Oklahoma City 6, Okla., CA Est. **$3,000,000**. OFFICE BLDG. and drive-in BANKING annex, OKLAHOMA CITY, OKLA. First National Bank & Trust Co., 120 N. Robinson St., Oklahoma City, Okla. Awarded Apr. 29. CD 4/20.

McClellan Constr. Co., Box 448, Waco, Tex., LB **$545,715**, est. $550,000. 4 story mezzanine, bsmnt., penthouse, etc. BANK and OFFICE, CORSICANA, TEX. Corsicana National Bank Bldg., Corsicana, Tex. Bids Apr. 27. CD 3/30.

† **Madden Constr. Co.**, 1705 Minden Rd., Bossier City, La., LB **$184,000**, rehabiliation BACHELOR OFFICERS QUARTERS, Serial No. AIV 41-093-55-241, FORT HOOD, TEX. U. S. Govt. Contg. & Purch. Div., Fort Hood, Tex. Bids Apr. 25. CD 9/15/52.

▲† **Madden Constr. Co.**, 1705 Minden Rd., Bossier City, La., LB **$2,528,697**, est. $2,000,000. rehabilitation and imprv. 58 enlisted mens BARRACKS, Inv. No. AIV 41-093-55-207, FORT HOOD, TEX. U. S. Govt. Purch. & Contg. Office, Bldg. 4249, Fort Hood, Tex. Bids Apr. 25. CD 3/29.

† **Ottinger Constr. Co.**, 6100 Camp Bowie Blvd., Fort Worth, Tex., LB **$862,495**, est. $864,169 Alt. 1; LB **$866,995**, est. $868,911, Alt. 1A; LB **$936,995**, est. $939,011, Alt. 1B, constr. 4-60-BACHELOR OFFICERS QUARTERS, ENG-41-443-55-116, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Apr. 27. CD 4/11.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Owner Builds. **$378,125**, 36 APARTMENT units, HOUSTON, TEX. CD 8/11.

N. E. Kennedy & Son, 1st. Natl. Bank Bldg., Houston, Tex., CA **$368,175**, Group B, 22 DWELLINGS, near HOUSTON, TEX. Jersey Village Development Co., c/o N. E. Kennedy, pres & Assocs., 1st Natl. Bank Bldg., Houston, Tex. CD 11/15.

† **Jersey Village Development Co.**, c/o N. E. Kennedy & Son & Assocs., 1st. Natl. Bank Bldg., Houston, Tex. Own Forces. **$360,000**. Lot 1, 6 all masonry DWELLINGS, **$355,000**, Lot 2, 15 DWELLINGS; **$385,400**, Lot 3, 21 DWELLINGS, near HOUSTON, TEX. Grand total $1,100,400. CD 4/1.

▲ **Sharp Constr. Co.**, 2202 Rosslyn St., Houston, Tex. CA **$750,000**. No. 1, medium-sized SHOPPING CENTER; CA **$500,000**, No. 2, medium-sized SHOPPING CENTER, "Sharpstown", HOUSTON, TEX. Frank W. Sharp, 2202 Rosslyn St., Houston, TEX. CD 8/13.

Sharp Constr. Co., 2202 Rosslyn St., Houston, Tex. CA **$725,000**, No. 2, 29 DWELLINGS; No. 3, 41 DWELLINGS, "Sharpstown", near HOUSTON, TEX. Frank J. Sharp, 2202 Rosslyn St., Houston, Tex. CD 8/12.

Jersey Village Corp., 1138 Suebarnett St., Houston, Tex., Own Forces, **$698,575**, Lot 8, 24 DWELLINGS; Lot 9, 25 DWELLINGS, near HOUSTON, TEX. Chris & Don Robinson, 2436 South Blvd., Houston, Tex.

Parker Bros. & Co., Inc., 5303 Navigation Blvd., Houston, Tex. Owner Builds. **$707,050**, (B) 28 frame DWELLINGS, (F) 41 frame DWELLINGS, PASADENA, TEX. CD 11/10.

A. A. & E. B. Jones, 1050 S. Jason St., Denver, Colo., CA, **$759,600**. 1 and 2 story, 67,000 sq. ft. brick, Warren E. Knapp SCHOOL, DENVER, COLO. School District No. 1, City and Denver Co., 414 14 St., Denver, Colo. Bids Apr. 20, awarded Apr. 27. CD 5/3, under LB.

▲ **Sam W. Emerson Co.**, 1836 Euclid Ave., Cleveland, O., CA, **$1,000,000**, 1 story, brick RESEARCH LABORATORY, DENVER, COLO. The Ohio Oil Co., 539 S. Main St., Findlay, O. Wilbur Watson & Assocs., 2930 Prospect Ave., Cleveland, O., engrs.-archts.

Newstrom-Davis & Co., 2000 W. 8 Ave., Denver, Colo., LB, **$767,000**. remodeling AUDITORIUM, DENVER, DENVER, COLO. City and Denver Co., City & County Bldg., Denver, Colo. Bids Apr. 21. CD 3/31.

Olson Constr. Co., Box 2068, Denver, Colo., LB, **$749,000** general contract 1 and 2 story, 67,000 sq. ft., brick Warren E. Knapp GRADE SCHOOL, DENVER, COLO. School Dist. No. 1, City and Denver Co., 414 14 St., Denver, Colo. Bids Apr. 20. CD 3/31.

Mellwin Constr. Co., 35 S. Fox St., Denver, Colo., LB, **$376,500**, general contract 1 and 2 story brick, steel HIGH SCHOOL, DURANGO, COLO. School District No. 9, La Plata Co., Durango, Colo. Bids Apr. 19. CD 3/29.

▲ **Leonard Constr. Co.**, 37 South Wabash Ave., Chicago 3, Ill., CA. **$1,500,000**, flotation and roaster PLANT, RICO, COLO. Rico Argentine Mining Co., Rico, Colo. CD 7/22/54.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **California**—BA 5/20—U. S. Eng., 751 S. Figueroa St., Los Angeles, Los Angeles River Imprvt., Carson St. to Wardlow Rd. River Mile 4.63 to Mile 3.78, Long Beach, Los Angeles Co., $1,250,000. CD 10/13/54.

▲ **California**—BA 5/23—Oakdale Irrigation District & South San Joaquin Irrigation District, 322 D St., Oakdale, Tuolumne Project A Donnells and Beardsley Dams, Stanislaus River, Sierra Nevada, Total Est. $31,800,000. Bids Apr. 21 rejected due to nonconformity with invitation. CD 4/26, under LB.

Calif., La Mesa—BA 5/24—La Mesa, Lemon Grove, Spring Valley Irrigation Dist., 4769 Spring St., 1 m.g. tank and two 2 m.g. steel water storage tanks, $200,000. CD 4/4.

▲ **Calif., El Centro**—BA 6/1—City, City Hall, Sch. V, 12 m.g.d. capacity water treatment plant, $625,000; Sch. VI, 70 m.g. capacity raw water storage basins, $150,000; Sch. VII, 15,000 ft. 18- to 30-in. water transmission pipe lines, $160,000; Sch. VIII, two 2½ m.g. treated water reservoirs, $165,000. Golden & Bryant, 1461 State St., engrs. CD 4/27/54.

† **Ore., Condon**—HOUSING—BA On Or About 6/9—Purch. & Contg. Office, 530th Air Defence Group, Geiger Field, Spokane, Wash., 9 housing units, etc. P-32, Air Force installations. Plans deposit $5.

† **Ore., North Bend**—HOUSING, etc.—BA On Or About 6/9—Purch. & Contg. Office, 530th Air Defense Group, Geiger Field, Spokane, Wash., 9 housing units, etc., P-12, Air Force Installations. Plans deposit $10.

† **Wash., Blaine**—HOUSING—BA On Or About 6/9—Purch. & Contg. Office, 530th Air Defense Group, Geiger Field, Spokane, 9 housing units, etc., Air Force Installations. Plans deposit $5.

† **Wash., Colville**—HOUSING—BA On Or About 6/9—Purch. & Contg. Office, 530th Air Defense Group, Geiger Field, Spokane, 9 housing units, etc., P-60, Air Force installations. Plans deposit $5.

† **Wash., Othello**—HOUSING—BA On Or About 6/9—Purch. & Contg. Office, 530th Air Defense Group, Geiger Field, Spokane, 9 housing units, etc., P-40, Air Force Installations. Plans deposit $5.

† **Utah**—BA 6/14—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Ogden, Schedule 1, Item 1, two 12 ft. by 22-ft. radial gates with pin bearings, guide rollers, 10-in. wall plates, gate sills and pin bearing grease piping for Spillway Pineview Dam enlargement, Weber Basin Proj. Inv. DS 4418. CD 8/4/52.

BIDS ASKED—BUILDINGS

Calif., Los Angeles—SHOP, etc.—BA 5/24—Los Angeles Dpt. Water & Power, 311 S. Spring St., shop and garage, Independence Headquarters, Independence, $200,000. S. B. Morris, c/o owner, engr.

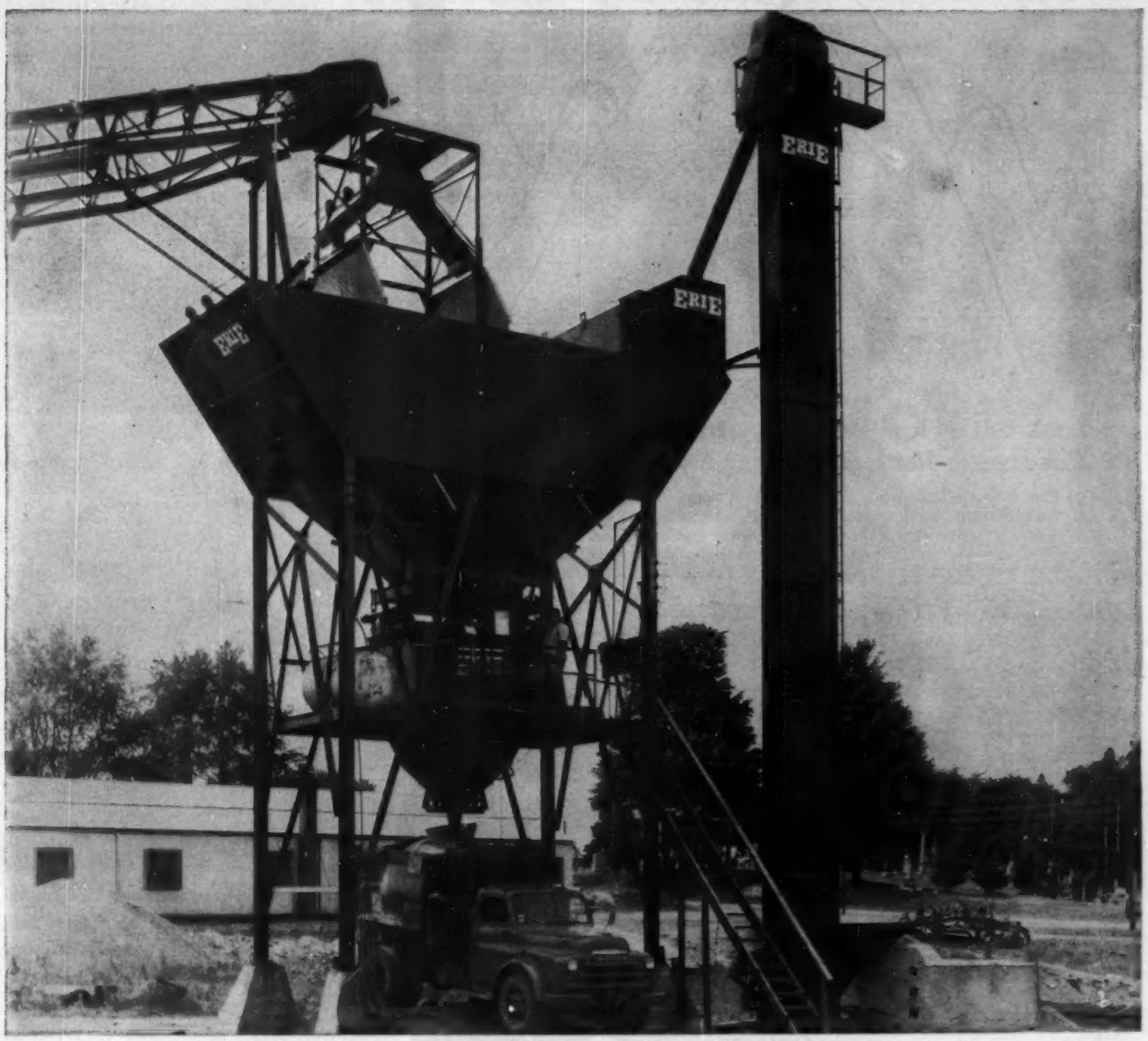
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

UTAH—State Road Comn., Salt Lake City, Utah—**W. W. Clyde Co.**, Springville, Utah, LB **$572,844**, est. $602,662, 3 in. plant mix bit. surf. 3.7 mi., two concrete bridges, Moab north, Moab south, Grand Co.;

(Continued on page 138)

CAFLISCH BUILDERS PICKED ERIE STRAYER TRUCK MIXER PLANT TO SERVE RURAL AREA WITH SPECIFICATION CONCRETE



Just one man is needed to run Caflisch Builders' Supply's Erie Plant. Equipment includes GTES 100-yd. Bin with EWEH 5-yd. AggreMeter, and 50-TPH Cement Elevators.

RECENTLY Caflisch Builders' Supply, Union City, Pa., went into the ready-mix business. Their success depended on delivery of top grade specification concrete to any point in a 15-mile rural area—fast and at reasonable prices.

To carry out this new venture, the Caflisch people bought an Erie Portable Truck Mixer Plant. After several months operation, here's what president Les Caflisch says about his Erie plant:

"We're really selling lots of concrete with our 'Johnny-on-the-Spot' service at down to earth prices. Our specification concrete meets the demands of highway officials and building contractors. Farmers who used to mix their own, just can't afford to in view of what we can do for the small user. We're pleased with our Erie Plant, with the fine concrete it produces, and with its low cost operation."

Mr. Caflisch's views are shared by hundreds of our customers. Erie Strayer's big Central Mixing Plants are famous for their ability to deliver without breaking down. The same fine engineering makes the Erie Portable a "best buy" for the smaller operators. Here are three reasons why:

1. One-man operation provides efficient, profitable production.
2. Welded sections. Can be assembled in eight hours. Knocks down just as fast—into parts that can be handled easily on low bay trailer.
3. Built to last—but with all standard parts for easy replacement.

For literature, write Dept. R55
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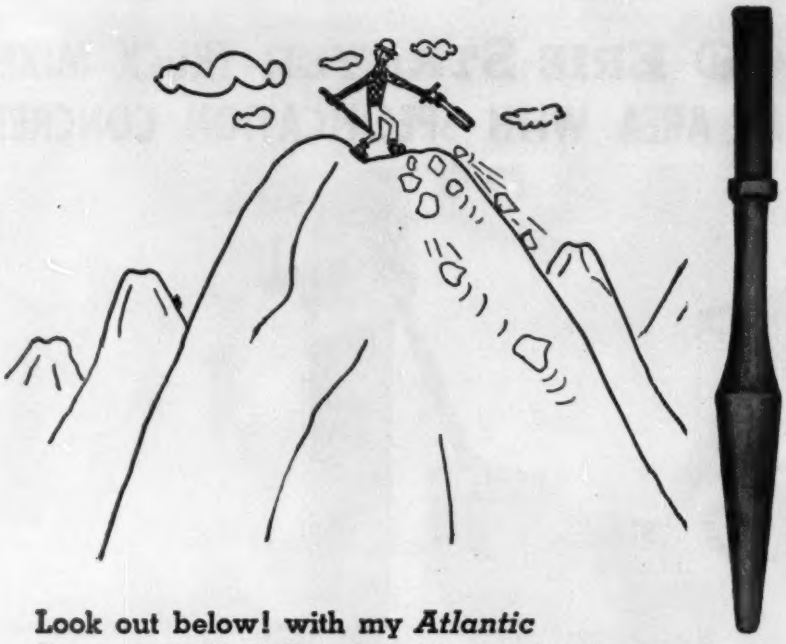
ERIE STRAYER COMPANY

255 GEIST RD. ERIE, PENNSYLVANIA



Look out below! with my *Atlantic Pneumatic Rock Breaker* this won't take long!

The Atlantic Pneumatic Rock Breaker breaks rock almost 4½ times faster than the old feather and wedge method! Eliminates slow plug and feather method, explosives, upkeep. Made from specially heat-treated Atlantic Tool Steel. Needs no sharpening, no grinding. Variety of sizes. Fits standard pavement breaking machine. Send for Booklet 3.

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Since 1918 . . . Always First with the Finest!
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CAST SEMI-STEEL
BALLS

Your low cost production tool for

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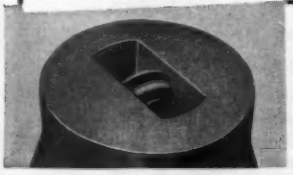
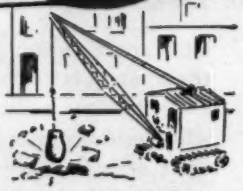
■smashing old paving ■secondary quarry breakage



Exclusive **E-Z SWING** steel eye, deeply imbedded in ball, gives better control; more cable protection. Special Release Hooks for "free dropping" also available.



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SIZES AND WEIGHTS SHIPPED FROM STOCK		
500 lbs. (ball-shaped)	2000 lbs. (ball-shaped)	5200 lbs.
1000 lbs.	3300 lbs.	6500 lbs.
1500 lbs.	4000 lbs.	8000 lbs.

MAKERS OF MANHOLE FRAMES, COVERS AND STEPS • STORM GRATINGS • METER FRAMES AND COVERS • CENTRIFUGAL PUMPS • GRAY IRON CASTINGS

FREDERICK IRON & STEEL, INC.
FREDERICK, MARYLAND

(Continued from page 136)

Utah—**Carl E. Nelson Co., Inc.**, Logan, Utah, LB **$261,346**, est. $307,812. 3 in. plant mix bit. surf. 7.965 mi. Emery-Castle Rock, Summit Co.;

Utah—**Thorn Constr.**, Springville, Utah, LB **$93,313**, est. $107,709, 3 in. plant mix bit. surf. 4.11 mi. between Provo and Olmstead, Utah Co. Bids Apr. 12.

UTAH—State Road Comn., Salt Lake City,

Strong Co., Box 228, Springville, Utah, LB **$527,462**. road mix bit. surf. and 2 concrete bridges, Junction US 60 and St. Rd. 46, San Juan Co. Bids Apr. 19.

▲† **Peter Kiewit Sons' Co.**, 1950 S. Colorado Blvd., Denver, Colo., CA, **$3,458,285**, runway and supporting facilities, HILL AIR FORCE BASE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Apr. 19, awarded Apr. 25. CD 4/26, under LB.

† **Gibbons & Reed**, 259 W. 3rd South St., Salt Lake City, Utah, LB **$107,753**, resurf. runway at Municipal Airport, Proj. 42-056-55-12, SALT LAKE CITY, UTAH. Utah National Guard Office of U. S. Property & Fiscal Officer, Bldg. 104, Fort Douglas, Utah. Bids Apr. 19. CD 4/7.

Gibbons & Reed, 259 W. 3 South St., Salt Lake City, Utah, CA **$272,904**, imprv. at Municipal Airport, SALT LAKE CITY, UTAH. Salt Lake City Corp., City Recorder, City-County Bldg., Salt Lake City, Utah. Bids Apr. 19.

† **Lembke, Clough & King**, Box 1391, Las Vegas, Nev., LB **$794,343**. Air Force Station, SM-163, ENG-04-353-55-120, INDIAN SPRINGS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 27. CD 4/18.

▲† **Hoffman Constr. Co.**, 715 S.W. Columbia St., Portland, Ore., CA **$1,392,985**, 2 pumping plants addns. at Hanford Works, RICHLAND, WASH. Atomic Energy Comn., Hanford Operations Office, Richland, Wash. CD 4/26. under LB.

† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho CA **$944,000**, runway, taxiway and parking apron work at Air Force Base, Spec. 44408, KLAMATH FALLS, ORE. P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids Apr. 26. CD 5/3, under LB.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,

rejected bids Mar. 31, Constr. 15 refuge bays, 3 existing refuge bays imprvs., c. Conc. curbs, gutters, plant mix surf., on untreated base placing, City of Los Angeles, San Bernardino Freeway between San Bernardino-Santa Ana Interchange and Indiana St., Los Angeles Co. CD 3/22.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Calif.—**Frederickson & Watson Constr. Co.**, 873 81 Ave. Oakland, Calif., LB **$105,306**, surf. 7.2 mi. FAS County Rte. 1081, near Mantan, Tehama Co.;

Calif.—**Arthur B. Siri, Inc.**, 1357 Cleveland Ave., Santa Rosa, Calif., LB **$174,113**. surf. 6.3 mi. Sign Route 128 near Boonville, Mendocnio Co.;

Calif.—**Baun Constr. Co.**, 3229 West Dudley Ave., Fresno, Calif., LB **$152,381**. surf. 7.8 mi. U. S. Hy. 99W, Willows, Glenn Co.;

Calif.—**Gill Constr. Co.**, 2931 Pierce Rd., Bakersfield, Calif., LB **$215,110**, surf. 13.9 mi. U. S. 40 and Sign Route 28, near Truckee-Tahoe City Placer and Nevada Counties;

Calif.—**Harms Bros.**, 5261 Stockton Blvd., Sacramento, Calif., LB **$368,157**, graded roadbed for Placerville Freeway, El Dorado Co.;

Calif.—**Eaton & Smith**, 1215 Michigan St., San Francisco, Calif., LB **$601,032**. grading, surf. 3.6 mi. U. S. 299, near Montgomery Creek, Shasta Co.;

Calif.—**Granite Constr. Co.**, P. O. Box 900 Watsonville, Calif., LB **$112,560**. grading, surf. 0.9 mi. Sign Route 9 Sunnyvale, Santa Clara Co. Bids Apr. 27. CD 4/18.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

J. E. Haddock Ltd., 3528 E. Foothill Blvd., Pasadena, Calif., CA, **$4,484,517**. grading, paving 2.4 mi., 11 bridges, 4 pedestrian undercrossings, etc. Harbor Freeway between 70 St. and Santa Barbara Ave., Los Angeles Co. Bids Mar. 17, awarded Apr. 6. CD 2/16.

† **Stolte Inc. and Gallagher & Burke, Inc.**, 8541 San Leandro St., Oakland, Calif., LB **$79,467** drainage structures, culverts, walks, erosion control, Contra Costa, San Francisco, Alameda, Marin and San Mateo Counties, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Apr. 28. CD 4/27.

City, City Hall, Dunsmuir, Calif., cancelled bids to have been opened Mar. 16, truss span bridge at through girder span across Sacramento River, DUNSMUIR, CALIF. Will re-advertise. CD 3/11.

† **Continental Constr. Co.**, 4671 24 St. Road, Sacramento, Calif., LB **$497,000**. ammunition maintenance facility, paving and utilities, Sierra Ordnance Depot, ENG-55-39, HERLONG, CALIF. U. S. Eng., 1209 8 St. Sacramento, Calif.

C M S Constr. Co., 8792 La Salle St., Cypress, Calif., CA **$168,383**, water distr. sys., 1955 replacements and addns. IMPERIAL, CALIF. City, City Hall, Imperial, Calif. Bids Mar. 30. Golden & Bryant, 1461 State St. El Centro, engrs. CD 11/3.

Sieger & Higday Constr. Co., 9501 E. Kruse Dr., Pico, Calif., LB **$452,125**, Pleasant Valley Drain, Bishop, Inyo Co., LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 207 S. Broadway, Los Angeles, Calif. Bids Apr. 28. CD 3/31.

▲† **Morrison-Knudsen & R. A. Westbrook**, 411 W. 5 St., Los Angeles, Calif., LB, **$4,746,417**, est. $5,000,000. Runway 13-31 exten. and addnl. parking, ENG-04-353-55-131, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 26.

▲ **George A. Fuller Co.**, 3100 West 8 St., Los Angeles, Calif., CA, **$1,538,647**, flight test facilities, Edwards Air Force Base, MUROC, CALIF. Douglas Aircraft Co.,

(Continued on page 141)

CONSTRUCTION BOSS CUTS TIME AND TRAVEL AT LEAST 50% WITH 2-WAY RADIO

BILL BLAKE OF HODGSON-BLAKE, INC. maintains constant contact with every construction job, from his office—or his car—using General Electric 2-way radio.

WITH 2-WAY RADIO installed on his grader, foreman Carl Richardson supervises work crews while operating the grader, yet is never out of touch with manager Blake and the office.

"I drive less than half the miles, yet have far greater control over all my crews, all over the *county*, since installing our General Electric 2-way radio system," reports Bill Blake, Vice President of Hodgson-Blake, Inc. of Montgomery, Alabama. "With radio in my car, I am never out of reach either by my crew foremen, or the office."

Here is another big advantage of radio—when construction equipment breaks down, you can order repair parts instantly over the air! Men and equipment go back to work quicker, saving you money by reducing idle waiting time to a minimum. G-E 2-way radio performs dependably through emergencies—is engineered to withstand the severest tests of weather, dust or shock.

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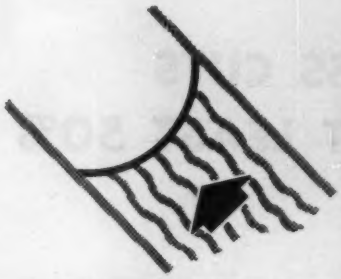
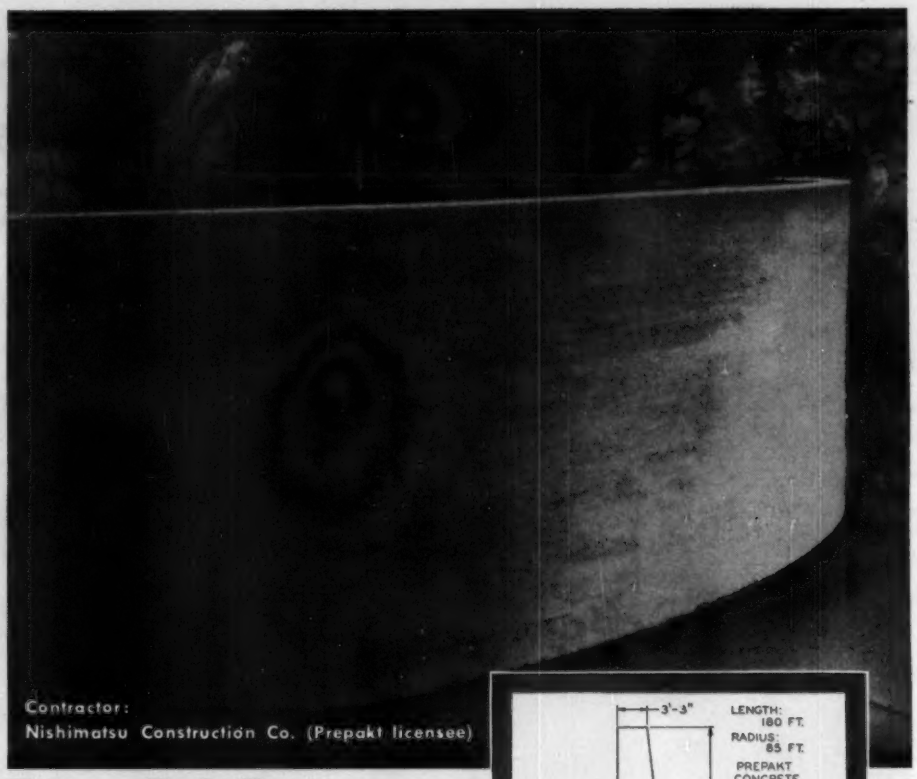


Tricky water diversion problem solved at Doshi Dam..



Contractor:
Nishimatsu Construction Co. (Prepakt licensee)

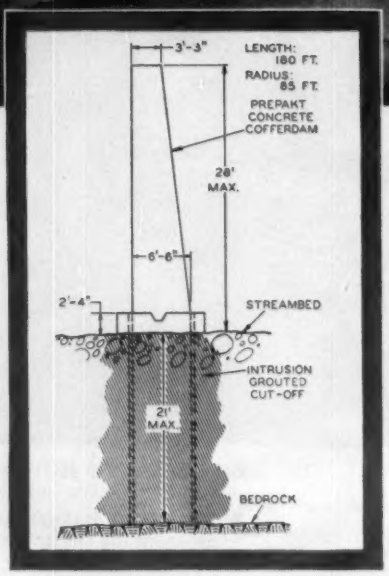
Diverting water during construction of Doshi Dam, Kanagawa Prefecture, Japan, was complicated by rocks and boulders in the streambed which prevented use of sheet piling. An almost inaccessible location in a deep, steep-sided gorge added to the difficulties.

PREPAKT supplied a simplified solution using a PREPAKT concrete cofferdam and an INTRUSION grout cutoff that reduced water leakage to a mere 10 gallons per hour.

The cofferdam was built as a thin, circular arch. PREPAKT concrete, made "in the form" by consolidating preplaced aggregate with INTRUSION mortar, was used because (1) the cofferdam had to withstand overtopping and (2) it was placed before the main concrete plant was set up.

The cutoff was placed in a streambed consisting of boulders filled in with rounded gravel and sand. Procedure was to drill, wash out sand and consolidate gravel with INTRUSION grout. This was done in stages to bedrock producing a cutoff 140 feet long and up to 21 feet deep.

This project is another example of the way economical PREPAKT methods and materials are being used to overcome difficult or expensive construction problems.



(Top) Thin, circular arch cofferdam of PREPAKT concrete diverts water during construction of Doshi Dam in Japan. (Bottom) Diagram of PREPAKT solution to water diversion problem shows how cutoff also provides firm foundation for cofferdam.

CONTRACTORS PREPAKT ENGINEERS

THE PREPAKT CONCRETE CO.
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(Continued from page 138)

Inc., 3855 Lakewood Blvd., Long Beach, Calif., Bids Apr. 19. CD 4/8.

† **Edward R. Siple,** 2545 San Fernando Rd., Los Angeles, Calif., LB $240,116, bulk fuel storage facility, Edwards Air Force Base, ENG-04-353-55-125, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 27. CD 4/4.

▲† **Stolte, Inc.,** 1541 N. Foothill St., Pasadena, Calif., LB, $2,063,800, flight test hangar, Edwards Air Force Base, ENG-04-353-55-126, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 28. CD 4/5.

† **U. S. Eng.,** 751 S. Figueroa St., Los Angeles, Calif., cancelled bids to have been opened Apr. 26, electrical distr. to Test Stand IA, ENG-04-353-55-28, MUROC, CALIF. CD 4/11.

▲† **Lindgren & Swinerton, Inc.,** 1631 Beverly Blvd., Los Angeles, Calif., LB, $1,605,374, shop, Norton Air Force Base, ENG-04-353-55-127. SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 27. CD 4/5.

Fred T. Faisey, 1874 25 Ave., San Francisco, Calif., CA, $46,761, water mains in portions of Midtown Terrace etc., Water Dpt. Contract 712, SAN FRANCISCO, Calif. Public Utilities Comm., City Hall, San Francisco, Calif. Bids Mar. 17.

Jess Hogg & Son and Souza & McCue Constr. Co., Colusa Hy., Yuba City, Calif., LB $101,998, 13,500 ft. 33-in. concrete outfall sewer, SUNNYVALE, CALIF. City, City Hall, Sunnyvale, Calif. CD 2/10/54.

BUILDINGS

LOW BIDS AND CONTRACTS

† **U. S. Eng.,** 751 S. Figueroa St., Los Angeles, Calif., rejected bids Apr. 27, AMMO STORAGE FACILITIES and site development, Yuma Test Station, ENG-04-353-55-110, YUMA, ARIZ. LB $181,840, est. $100,000. CD 4/11.

▲ **Ehrhart & Arthur,** 417 South Hill St., Los Angeles 13, Calif., CA Est. $1,400,000. REFINERY EXPANSION, incl. catalytic pre-treater for sovaformer unit, 3rd boiler in steam plant, misc. tankager, FERNDALE, WASH. General Petroleum Corp., (sub) Socony-Vacuum Co:. Inc., 612 S. Flower St., Los Angeles, Calif.

Hazen & Clark, 1101 N. Howard St., Spokane, Wash., LB $710,041, 90,000 sq. ft. 1 story, masonry, rein.-con., SENIOR HIGH SCHOOL, OPPORTUNITY, WASH. Central Valley School Dist. 356, Opportunity, Wash. Bids Apr. 26. CD 4/7.

Port of Vancouver, foot of W. 16 St., Vancouver, Wash. Day Labor, $200,000, 120x600 ft. WAREHOUSE, for California Packing Corp., VANCOUVER, WASH.

† **U. S. Eng.,** 4735 E. Marginal Way, Seattle 4, Wash. rejected bids Apr. 6, MOTOR REPAIR SHOP, Yakima Training Center, Inv. 55-151, YAKIMA, WASH. LB $120,373. New Bids May 6.

Linfield College, McMinnville, Ore., Own Forces $450,000. 3 story STUDENT RECREATION BLDG., MCMINNVILLE, ORE. CD 11/4.

President Manor, Inc., 2416 W. Broadway, Anaheim, Calif., Owner Builds, $979,700. 80 frame stucco DWELLINGS, Tract 2393, ANAHEIM, CALIF.

▲ **James I. Barnes Constr. Co.,** 940 Spring St., Redwood City, Calif., CA, $1,363,000. Group III rein.-con. buildings, Bakersfield COLLEGE, BAKERSFIELD, CALIF. Kern County High School & Junior College Dist., 312 Bernard St., Bakersfield, Calif. Bids Apr. 25. CD 4/5.

W. R. Kalsched & Co., 201 San Jose Ave., San Jose, Calif., LB, $473,000. Cupertino Elementary SCHOOL, CUPERTINO, CALIF. Cupertino Union Elementary School Dist., Cupertino, Calif. Bids Apr. 22.

Woodside Builders, 2204 MacDonald Ave., Richmond, Calif. Owner Builds. $731,112. 79 HOME subdivision, EL SOBRANTE, CALIF.

Glover Constr. Co., 1273 Hearn St., Santa Rosa, Calif., LB, $659,850. 50 bed tuberculosis wing addn. to Humboldt County Community HOSPITAL, EUREKA, CALIF. Humbolt Co., Court House, Eureka, Calif. Bids Apr. 11. CD 1/19.

Peninsula Investment Corp., 3432 Normal Ave., Fresno, Calif., Owner Builds, $870,000. 87 HOME subdivision, FRESNO, CALIF.

Evensen Constr. Co., 2105 McKinley Ave., Fresno, Calif., Owner Builds, $444,000. 74 frame, stucco HOMES, FRESNO, CALIF.

▲ **L. H. Hansen & Son,** Box 1784, Fresno, Calif., LB Est. $3,000,000, 2 story, rein.-con. STORE, FRESNO, CALIF. Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill. Bids Apr. 27. CD 4/26.

Chotiner & Gumbiner, 5316 Venice Blvd., Los Angeles 19, Calif., CA $215,125, concrete MANUFACTURING BLDG., FULLERTON, CALIF. Arcadia Metal Products, 324 S. 2 St., Arcadia, Calif. Bids Apr. 1, awarded Apr. 20. CD 3/22.

▲ **Hearth & Veruis Constr. Companies,** 1173 Jackson St., Hayward, Calif., CA, $1,200,000. 160 frame, stucco HOME subdivision, HAYWARD, CALIF. Owner, c/o contractor.

Bay Counties & North Central Constr. Companies, 1373 Jackson St., Hayward, Calif., CA, $442,500. 59 frame, stucco HOME subdivision, HAYWARD, CALIF. Owner, c/o contractor.

Los Altos Development Co., 5510 Britton Dr., Long Beach, Calif., CA, $896,500 103 frame, stucco DWELLINGS, El Roble and El Cedral Sts., and Josie Ave., LONG BEACH, CALIF. Home Investment Co., 5510 Britton Dr., Long Beach, Calif.

Howard Hastings, Inc., 1135 N. La Palmas St., Los Angeles 38, Calif., Est. $100,000. WAREHOUSE, 5957 Santa Monica Blvd., LOS ANGELES, CALIF. Cinema Mercantile Co. Ltd., c/o Chas. O. Matcham, 621 S. Hope St., Los Angeles, Calif. Bids Mar. 23. CD 3/22.

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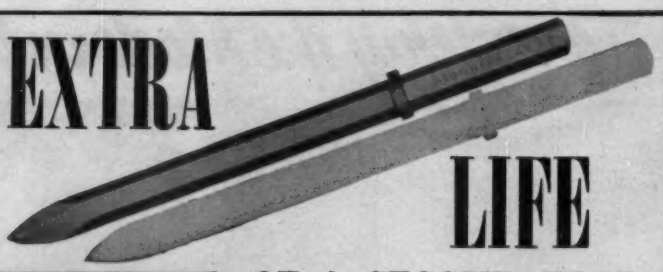

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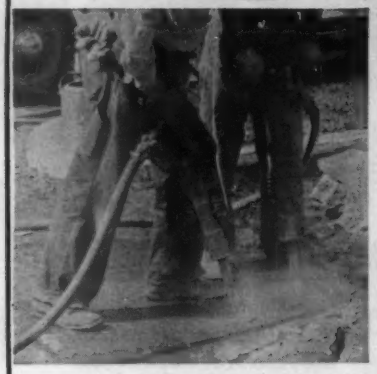

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Builtwell Constr. Co., 4745 Geary Blvd., San Francisco, Calif., Owner Builds, $400,000, frame, stucco APARTMENT, Laguna and Jackson Sts., SAN FRANCISCO, CALIF.

George Bianchi, 850 S. 7 St., San Jose, Calif., LB, $409,409, Peter Burnett Junior HIGH SCHOOL Addn., SAN JOSE, CALIF. San Jose City Unified School Dist., 408 Almaden Ave., San Jose, Calif. CD 2/15/54.

M. C. Cavoretto, 11201 San Pablo Ave., El Cerrito, Calif. Owner Builds, $750,000, 61 HOME subdivision, SAN PABLO, CALIF.

Mira Costa Constr. Co., Box 599, Torrance, Calif., Owner Builds, $687,100, 61 frame, stucco DWELLINGS, Gunter Rd., SAN PEDRO, CALIF.

Pasetta Constr. Co., 2795 Park Ave., Santa Clara, Calif., CA, $125,000. 20,000 sq. ft. WAREHOUSE, SANTA CLARA, CALIF. Westates Steel Co., 1055 Marin Ave., Santa Clara, Calif.

E. N. Frame, Box 44635, Hancock St., Los Angeles, Calif., CA, $501,600. 60 frame, stucco DWELLINGS, 224 Pl. and 225 St., TORRANCE, CALIF. Awanda, Inc., Box 44635, Hancock Sta., Los Angeles, Calif.

▲ **Teichera & Son**, 1391 Mariposa St., Vallejo, Calif., CA, $1,506,000. 80 frame, stucco HOME subdivision, VALLEJO, CALIF. Owner, c/o contractor.

E. N. Duncan, 428 N. Citrus St., Covina, Calif., CA, $378,000, 28 frame, stucco DWELLINGS, Steffen St. and Worthy Dr., WEST COVINA, CALIF. Jesse Marcus, 1533 Holly Oak Dr., West Covina, Calif.

Kauffman Homes, Inc., 2918 W. Compton Blvd., Gardena, Calif., Owner Builds, $459,000. 50 frame, stucco DWELLINGS, Tract 20520, WEST COVINA, CALIF.

Rynes—Smith Co., 5801 E. Randolph St., Los Angeles, Calif., Owner Builds. $890,000. 81 frame, stucco DWELLINGS, Dunshill Court, Maybrook Ave. and Lashburn St., WHITTIER, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Camp Borden—SCHOOL—BA 5/17—Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, Class I, Stage III and Stage IV, school extension with auditorium, R.C.A.F. Station, $400,000. Plans deposit $100. H. I. Stricker, c/o owner, engr.

Ont., Woodstock—BA 5/17—Public Utilities Comn., 524 Dundas St., 400,000 gal. rein.-con. covered reservoir with connecting piping to ww. Pumping Station, $54,000. Plans deposit $10. James F. MacLaren Assoc., 705 Yonge St., Toronto, engrs. CD 11/19/52.

N. B., St. John—PIER—BA 5/18—Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., pier replacement and exten. Caissie's Cove, $106,000. Plans deposit $25. J. P. Carriere, c/o owner, engr. CD 2/21.

Ont., Goderich—HARBOR IMPRVS—BA 5/18—Dept. P. Wks., Hunter Bldg., Ottawa, harbor imprvs. $600,000. Plans deposit $50. A. A. Anderson, c/o owner, ch. engr.

Ontario—BA 5/24—E. B. Easson, secy., Hydro-Electric Power Comn. of Ontario, 620 University Ave., Toronto, Zone 2, Cornwall Dyke on north bank of three sections of St. Lawrence River, International Rapids section approx. 4 mi. west of Cornwall, Plans deposit $25.

BIDS ASKED—BUILDINGS

N. S., Yarmouth—TERMINAL—BA 5/25—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., terminal bldg. for ferry service, $350,000. E. A. Gardner, c/o owner, ch. archt.

SOON LETS CONTRACT—BUILDINGS

Que., Quebec City—OFFICE—Community Realties Corp. Ltd., 80 St. Pierre St., Quebec, soon lets contract 8 story, bsmnt. 62x100 ft., steel, brick office, Youville Square, $500,000. Jean & Dupere, 181 St. John St., archts. CD 2/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Alberta—Alberta Govt., Parliament Bldgs., Edmonton, Alta.—**Square M Constr. Co. Ltd.**, 10325 61 Ave., Edmonton, Alta., CA $431,940, grading 8 mi. Hy. No. 16 from south of entrance to Jasper Park boundary, Awarded Apr. 26;

Alta.—**Evans Constr. Co. Ltd.**, Edmonton, Alta. CA $192,261, grading, etc. Hy. No 9 from Chinook to east of Cereal. Awarded Apr. 25. CD 12/1/43.

▲† **Colonial Constr. Co. Ltd.**, Shaw St., St. Johns, Newfoundland, CA Est. $1,000,000. air base imprvs., dependents school and water storage reservoir, Pepperell Air Force Base, ENG-30-347-55-4, ST. JOHNS, NEWFOUNDLAND. U. S. Eng., 346 Broadway, New York 13, N. Y. O'Connor & Kilham, 101 Park Ave., New York, N. Y., and Eggers & Higgins, 100 E. 42 St., New York, N. Y., archts. Praeger & Maguire, 126 E. 38 St., New York, N. Y., engrs. Bids Apr. 12, awarded Apr. 26.

Marino Constr. Co., 251 Raleigh Ave., Toronto, Ont., LB $104,039, water mains in West Hill and Highland Creek areas, TORONTO, ONT. Public Utilities Comn., Scarborough Twp., 1750 Kingston Rd., Toronto 13, Ont. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, Ont., engrs.

H. J. Patterson, 19 Harris Crescent, Burlington, Ont., CA $556,345, 2.6 mi. 12 in.; 3.3 mi. 8 in.; 7.4 mi. 6 in. water mains, hydrants, valves, house services, etc., QUEENSTON, ONT. Niagara Twp. Town Hall, Queenston, Ont. R. Blake Erwin, 437 Queen St., Niagara Falls, twp. engr. Awarded Apr. 25.

Magloire Cauchon Ltd., 311 La Salle St., Quebec City, Que., CA $170,772, filter plant for WW, ST. ROMAULD D'ETCHEMIN, QUE. Municipality of St. Romauld D'Etchemin, Que. Marc Gilbert, 31 McMahon St., Quebec City, Que., engr. Awarded Apr. 21. CD 10/19.

(Continued on page 144)

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Davenport, Iowa

KANSAS
The Victor L. Phillips Co.
3611 N. Broadway
Wichita, Kansas

MASSACHUSETTS
Universal Concrete Accessories, Inc.
51 Barnstable Street
Swampscott, Massachusetts

MINNESOTA
William H. Ziegler Co., Inc.
2929 University Avenue
Minneapolis 14, Minnesota
William H. Ziegler Co., Inc.
37th and 6th Avenue, West
Hibbing, Minnesota
William H. Ziegler Co., Inc.
330 Garfield Avenue
Duluth, Minnesota
William H. Ziegler Co., Inc.
1115 S. Main Street
Crookston, Minnesota

MISSOURI
The Victor L. Phillips Co.
1600 Baltimore St.
Kansas City 8, Missouri
Geo. F. Smith Company
5215 Manchester Avenue
St. Louis 10, Missouri

NEBRASKA
Anderson Equipment Co., Inc.
Merchants Nat'l. Bank Bldg.
13th and Farnam Sts.,
Omaha 8, Nebraska

NEW YORK
Builders Rental Equipment Inc.
46 Skillen St.
Buffalo 23, New York
Universal Builders Supply Co.
51 E. 42nd St.
New York 17, N. Y.
Universal Builders Supply Co.
212 Mains Avenue
Syracuse 7, N. Y.

OKLAHOMA
The Victor L. Phillips Co.
6901 East 11th St. on U.S. 66
Tulsa, Oklahoma
The Victor L. Phillips Co.
1222 W. Main St.
Oklahoma City, Oklahoma

PENNSYLVANIA
Dravo-Doyle Company
2601 Preble Avenue
Pittsburgh 33, Pennsylvania

TENNESSEE
Tri-State Equipment Company
520 Mulberry at Calhoun
Memphis 2, Tennessee

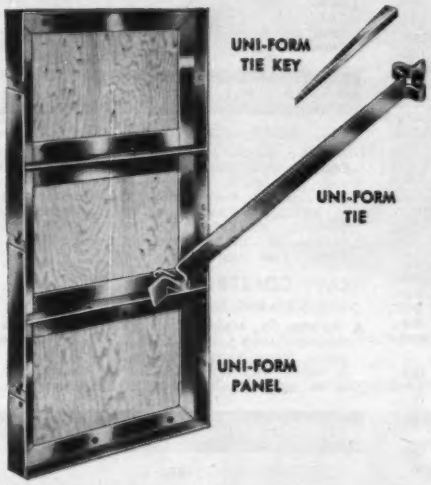
WASHINGTON
Construction Equipment Co.
E. 3823 Trent Ave.
Spokane 6, Washington

WISCONSIN
Hunter Tractor & Machinery Co.
327 S. 16th St.
Milwaukee 3, Wisconsin

UNI-FORM Concrete Forms

SIMPLE . . . FAST . . . FLEXIBLE

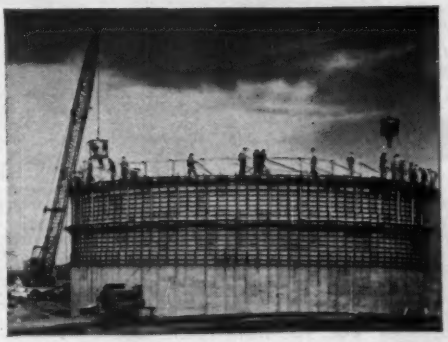
3 BASIC ELEMENTS mean
Faster, Easier, More Accurate Forming



Simple mechanical assembly of UNI-FORM Concrete Forms provides faster forming . . . easier stripping and lowest all around costs. Ready to use when they reach the job, UNI-FORMS guarantee time, material and labor savings on any forming job. Let us prove UNI-FORM advantages . . . send us a set of prints for free recommendation and proposal on your next job. There's no obligation.

FORM CIRCULAR WALLS AT LOWEST COST

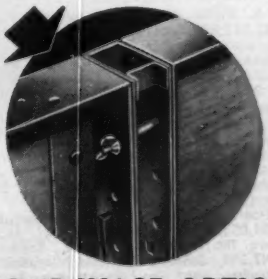
- **No alignment or bracing on outside.**
- **Minimum excavation required.**
- **Free working area.**
- **Maximum job safety.**



UNI-FORMING Circular walls costs less per square ft. of contact area . . . provides unhampered steel setting . . . greater control of concrete placement. Write for details on UNI-FORMING circular walls.

PREFABRICATED CIRCULAR WALL FILLER

Used on outside form only . . . assures true form curvature with standard UNI-FORM Panels.



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DISTRIBUTORS IN PRINCIPAL CITIES

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(Continued from page 142)

W. Beattie Ramsay Constr. Co. Ltd., Victoria and McDonald St., Regina, Sask., CA, $638,714, Contracts 1 and 2, pavement and c.conc. walks on streets, REGINA, SASK. City, City Hall, Regina, Sask. Awarded Apr. 26, CD 3/25/53;
Bird Constr. Co., Ltd., 7 and Smith Sts., Regina, Sask., CA, $75,185. Contract No. 3, pavement and concrete walks on various streets, (Regina, Sask.).

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Byers Constr. Co., Ltd., 5675 Webster Ave., Montreal, Que., CA Est. $1,000,000. 3 story, 140x200 ft. rein.-con., steel rack WAREHOUSE, AMHERSTBURG, ONT. Calvert Distillers Ltd., Sandwich St., Amherstburg, Ont. Brian R. Perry, 1168 St. Catherine St. W., Montreal, Que., engr. Awarded Apr. 26.

J. L. E. Price & Co. Ltd., 4664 St. Catherine St. W., Montreal, Que., CA $1,000,000. FACTORY, BROCKVILLE, ONT. Parke Davis & Co. Ltd., 2301 Sandwich St. E., Windsor, Ont. Bids Apr. 25. CD 4/8.

▲ Pigott Constr. Co. Ltd., Pigott Bldg., Hamilton, Ont., LB, $1,157,440, Federal PUBLIC BLDG. on former Central School site, CHATHAM, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Apr. 27. CD 3/1.

▲ Frid Constr. Co., Harbor Administration Bldg., Hamilton, Ont., CA $1,400,000, HOSPITAL addn., OAKVILLE, ONT. Oakville-Trafalgar Memorial Hospital, Oakville, Ont. Awarded Apr. 26.

Curran & Herridge Constr. Co. Ltd., 283 Confederation St., Sarnia, Ont., CA $193,000. PLANT, CAFETERIA, at rubber plant, Hy. 40, south of SARNIA, ONT. Polymer Corp. Ltd., S. Vidal St., Sarnia, Ont. Giffels & Vallet of Canada Ltd., Canada Trust Bldg., Windsor, Ont., engrs. Awarded Apr. 22. CD 6/16.

Finley W. McLachlan Ltd., 195 Fairbank Ave., Toronto, Ont., CA $430,000, WAREHOUSE and RESIDENCE, Bridgeland Ave. near Dufferin St., TORONTO, ONT. International Bible-Students Assoc., 40 Irwin Ave., Toronto, Ont.

▲ Concrete Constr. Ltd., 1082 Decarie Blvd., Montreal, Que., CA $4,000,000, 10 story, rein.-con., brick stone Sacred Heart HOSPITAL, Gamelin Blvd., HULL, QUE. Hospital du Sacre-Coeur de Hull, 222 Laurier Ave., Hull, Que. Brais & Savard, 1080 Decarie Blvd., Montreal, archts. CD 8/17.

Bouchard & Gravel Inc., 150 S. John St., Jonquiere, Que., CA $381,630, 2 story, 125x201 ft., rein.-con. brick CONVENT du Mont-Carmel addn., JONQUIERE, QUE. La Commission Scolaire de Jonquiere, Jonquiere, Que. Awarded Apr. 25. CD 12/8/50.

▲ Douglas Bremmer Constr. Ltd., 5965 Monkland Ave., Montreal, Que., CA, $1,597,447, 1 and 2 story, L shaped, Northmount High SCHOOL, MONTREAL, QUE. Protestant Bd. School Comrs. of Montreal, 3460 McTavish St., Montreal, Que. Bids Apr. 14, awarded Apr. 27. CD 4/20, under LB.

Pro-Lab Contr. Ltd., 262 Quintal St., Laval des Rapides, Montreal, Que., CA, $860,000, 80 BUNGALOWS in housing project, MONTREAL, QUE. Les Habitats Labelle, 262 Quintal St., Laval des Rapides, Que. Awarded Apr. 15.

J. Serrentino Constr. Co. Ltd., 6660 Decarie Blvd., Montreal, Que., CA $120,000. FACTORY, Notre Dame St. E. near Dickson Ave., MONTREAL, QUE. New York Wire Works Ltd., 4375 Iberville St., Montreal, Que. Awarded Apr. 22.

Paradise Gardens Development, Inc., 265 Craig St. W., Montreal, Que. Owner Builds. $500,000, HOUSING DEVELOPMENT, ST. HUBERT, QUE. Gabriel Jarry, 7271 Querbes Ave., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† S. S. Mullen, Inc., 621 9 Ave. N., Seattle, Wash., LB $1,512,893, est. $1,875,091, utilidor, with manholes, piping, hydrants, lift stations, chlorinating room, wellhouse addn., etc., Inv. 55-61, Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Apr. 26.

▲† Manson-Osberg Constr. Co., 1132 N. 128 St., Seattle, Wash., CA $3,693,390, Schedule 3, Kotzebue; CA $3,061,018, Schedule 4, Fort Yukon for Military Installations, Inv. 55-63. ALASKA Grand total $17,909,422. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., Bids Apr. 27, Awarded Apr. 29, CD 5/2, under LB;
Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, CA $4,053,457, Schedule 5, Bethel, (Alaska);
C. Berg, Inc., 2730 Westlake Ave., Seattle, Wash. CA $1,897,184, Schedule 6, Homer, (Alaska);
S. Bergesen, 5402 San Francisco Ave., Tacoma, Wash., CA $3,087,026, Schedule 1, Unalakleet; (Alaska);
S. S. Mullen, Inc., 621 9th Ave., Seattle, Wash. CA $2,117,347. Schedule 2, Chiniak (Alaska).

▲† S. S. Mullen, Inc., 621 9th Ave. N., Seattle, Wash., CA $1,512,893, utilidors, Inv. 55-61, Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Apr. 26. CD 5/2, under LB.

▲† L. B. McKinney Co., 728 S. E. Union St., Portland, Ore., LB $2,016,912, est. $1,329,792, rehabilitate existing utilidors and constr. new utilidors in mobilization area. Eielson Air Force Base, Inv. 55-28, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Apr. 28. CD 3/30.

▲† Raber & Kief, 420 Queen Anne Ave., Seattle, Wash., LB $1,168,975, water sys., Spec. 37589; fire alarm sys., Spec. 37598, ADAK, ALASKA. 17th Naval Dist., Kodiak, Alaska. Bids Apr. 1.

S. Birch & Sons and Green Constr. Co., 1300 Aloha St., Seattle, Wash., CA $140,664, paving 44½ blocks city streets, ANCHORAGE, ALASKA. City, City Hall, Anchorage, Alaska. CD 10/21/52.

† Empire Constr. Co., 0235 S. W. Bancroft St., Portland, Ore., LB $163,128, est. $236,000, chlorinator plant and 4,300 ft. 12 and 14 in. wood stave, steel, c.i. or asbestos-cement water mains. Proj. Aaa 50-A-172, KETCHIKAN, ALASKA. Alaska P. Wks., Dpt. Interior, 123 W. 3 St., Juneau, Alaska. Bids Apr. 27. CD 3/21.

† S. Bergesen, Rte. 10, Box 971, Tacoma, Wash. LB $316,649. 10,325 ft. 6- to 12-in. sewers; 15,750 ft. 4- to 10-in. water mains and street work, Proj. Aaa 50-A-19, PETERSBURG, ALASKA. Alaska P. Wks., Dpt. Interior, 123 W. 3 St., Juneau, Alaska. Bids Apr. 27. CD 3/21.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

† Panama Canal—BA 5/31—Office of Engineering & Constr. Director, Balboa Heights, Canal Zone, purchase, dismantling and removal 3 emergency dams at Miraflores and Pedro Miguel Locks, Panama Canal. Plans deposit $40.

AMERICANS ABROAD

BIDS ASKED—HEAVY CONSTRUCTION

Iraq—BA 8/31—Development Bd., Ministry of Development, Baghdad, constr. dam and spillway, outlet and appurtenant works, Derbend-I-Kahn Proj. on Diyala Sirwan River approx. 35 kilometers southwest of Halabaja and some 300 kilometers northeast of Baghdad. Harza Engr. Co., 400 West Madison St., Chicago, Ill., U. S. A., consult. engrs. Plans deposit Twenty Five Iraqi Dinars.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Agroman Co., Madrid, Spain. LB $3,249,565 Base Bid, concrete constr.; LB $2,561,117, Alt., asphalt for constr. Maron Runway, Madrid, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W. Wash. 25, D. C. CD 1/12/54, under CA.

FOREIGN

BIDS ASKED—BUILDINGS

India—PLANT—Bids Asked—Govt. of India, (Ministry of Production) Shahjehan Rd., New Delhi, coal washing plant, at Kargali/Bokaro Colliery. Plans deposit $78.

Proposed Projects

WATER SUPPLY

Ill., Highland—City, City Hall, voted $400,000 bonds creation of Silver Lake to increase water supply.

Kan., Wellington—City, voted $690,000 bonds Apr. 5, water sys. expansion. CD 3/23.

O., Toledo—Comrs. Lucas Co., Court House, water main exten. in Glendale and Michigan Aves., 8 in. from Plaskon plant on Glendale Ave. to Michigan Ave. to Chicago Pike. $148,559. Raymond E. Hall, Detroit Ave., sanitary engr.

Ore., Gresham—City, City Hall, voted bonds, water reservoir, $150,000. Elden Carter, city engr. CD 9/14/45.

▲ S. C., Greenville—City, City Hall, water reservoir in Upper Greenville Co. $8,400,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult engrs. CD 4/20.

Tex., Big Spring—Water Dist. of Coahoma & Sand Springs, Big Spring, water line from Big Springs to Coahoma. $100,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

Tex., Lolita—Jackson Water Control & Imprvt. Dist. No. 1, c/o C. T. Fisher, Edna, Sec. 1, water supply well, pumping unit, $45,000; Sec. 2, water distr. lines, elevated storage, $55,000.

Tex., Port Neches—Port Neches Water Dist., Port Neches, bond election June 4, water plant imprvs. $80,000; water distr. sys. $275,000. H. Berlin, dist. engr. CD 1/11.

Tex., Seagoville—City, water mains, $90,000; water supply well $50,000. Forrest & Cotton, 802 Praetorian Bldg., Dallas, consult. engrs. CD 1/11.

SEWERS, WASTE DISPOSAL

▲ Calif., Redding—HOMES—Beresa, Inc., Box 1787 Redding, 624 Homes, $6,000,000.

Iowa., Fort Dodge—City, City Hall, Northeast Sewer Project. $300,000.

Mich., Lansing—City, Dpt. P. Wks., City Hall, sewer mains. $115,000. Collins Thornton, City Hall, engr. CD 12/17/48

Neb., Lincoln—City, City Hall, storm sewers along South-East Radial. $177,000. C. L. Fisher, city engr. CD 6/17.

O., Euclid—City, 585 E. 222 St., exten. E. 222 St. storm sewer from Tracy to St. Clair Aves., approx. 3,800 ft. $300,000. CD 11/8.

▲ R. I., Johnston—Town, Sanitary Dist. Comm., Town Hall, sanitary sewerage sys. $2,000,000. Haley & Ward, 73 Tremont St., Boston, Mass., consult. engrs. CD 9/1/53.

Tex., Houston—Coronado Homes Management, Inc., c/o Joe E. Barnett, 2108 6th St., sanitary sewers, $77,000 storm sewers, grading, $75,000, in "Tanglebrier" Addn.

Tex., Houston—W. Edward Brown, Frank Teague & Paul H. Wolf, Union Natl. Bank Bldg., sanitary sewers, $77,500; storm sewers, $75,000, addnl. sect. of tract adjacent to Lincoln City for Negroes.

Tex., Houston—Glenbrook Valley Corp., 7445 Park Place Blvd., storm sewers, $75,000; sanitary sewers, $75,000, 324-acre tract exten. of Glenbrook Valley Subdivision.

Tex., Houston—Memorial Forest, c/o Robert P. Puig & H. W. Edmunds, 3829 Villanova St., sanitary sewers, $80,000; storm sewers, $75,000, across Memorial Dr. from Warrenton addn.

Tex., Houston—Miles. Strickland & Associate Akard Beall, 2802 Louisiana St., sanitary sewers, $78,125; storm sewers, $75,000, for new sect. of "Woodlawn Acres."

Tex., LaMarque-Texas City—Lewis O. Tyra, c/o Tyra Lumber Co., 5519 Lawndale St., Houston, sanitary sewers, $75,000; storm sewers, $75,000. Charles R. Haile & Assocs., Inc., 2801 San Jacinto St., Houston, Consult. engr.

Tex., Mission—City, storm sewers, $350,000. D. L. Fabian, Mission, consult. engr.

Tex., Port Neches—Port Neches Water Dist., Port Neches, bond election June 4, sanitary sewerage sys. rehabilitation work, $75,000; sanitary sewer collection sys. $395,000; sewage disposal unit; $175,000. H. Berlin, dist. engr. CD 1/11.

Tex., Seagoville—City, sanitary sewer disposal plant, $200,000; sanitary sewer lines, $175,000. Forrest & Cotton, 802 Praetorian Bldg., Dallas, consult. engrs.

Tex., Tyler—Tyler Home Builders Assn., Tyler, sanitary sewers and disposal unit, $80,000; storm sewers $75,000 for Negroes.

Wash., Sedro Wooley—City, City Hall, storm and sanitary system and treatment plant $100,000. J. H. Reid & Assocs., Edmonds, consult engrs.

Wis., Cudahy—City, City Hall, storm sewers in S. Lake Dr. $257,500. H. C. Webster & Son, 759 N. 2 St., Milwaukee, consult. engrs. J. Tiry, c/o owner, engr.

Ont., Guelph—City, City Hall, sewage treatment plant, $750,000; trunk sewers, $150,000.

BRIDGES

▲ OREGON and WASHINGTON — Port of Astoria, Astoria, Ore.,
Clatsop Co., Ore.-Wahkiakum Co., Wash.—5 mi. highway bridge at mouth of Columbia River, Clatsop Co., Ore. to Megler, Wahkiakum Co., Wash. $25,430,000. Tudo Engineering Co., 74 N. Montgomery St., San Francisco, Calif., consult. engr. CD 7/20/45.

STREETS AND ROADS

Ill., Chicago—City, City Hall, c. conc. paving 5 Ave. from Hamlin Ave. to Madison St., $140,000. CD 4/25/45.

Neb., Omaha—Dougles Co., Court House, grading on mail route roads, Military Ave., M. R. Rd., Bennington M. R. Rd., Elkhorn M. R. Rd., Valley M. R. Rd. $106,800; asph. paving Schroder Mail Rte. Rds. on RFD 3, RFD 4 and Elkhorn M. R. Rd.. $125,496; armor coating on Schroeder Mail Rte. Rds., being on RFD 1, 2 and 7, $160,000. William Green, co. engr. CD 1/31.

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
toll booths, utility bldgs. and restaurants for Northeast Turnpike Exten. between Phila. and Scranton. $1,500,000. Gilboy, Bellante & Claus, Rittenhouse Square, Phila., consult. engrs. CD 4/15.

Tex., Friona—City, 30 to 50 blk. asph. type street paving, $125,000. Parkhill, Smith & Cooper, 1414 Avenue J, Lubbock, consult. engr.

Tex., Mission—City, street paving, imprvs. $500,000. D. L. Fabian, Mission, consult. engr.

EARTHWORK, WATERWAYS

† South Carolina—U. S. Eng., Custom House, Charleston, relocating harbor channel, Charleston. $2,000,000.

Tex., Mission—City, open drainage throughout city. $150,000. D. L. Fabian, Mission, consult. engr. CD 8/10/51.

AIRPORTS

† Calif., San Bernardino—QUARTERS—U. S. Eng., 751 S. Figueroa St., Los Angeles, plans by Kristner, Wright & Wright, 816 W. 5 St., Los Angeles, officers quarters, Norton Air Force Base, $250,000. CD 11/13/51.

† Md., Andrews Air Force Base—OPERATIONS BLDG.—U. S. Eng., First and Douglas St., N.W., Wash. 25 D. C., plans by Whitman, Requardt & Assoc., engrs.-archts., 1304 St. Paul St., Baltimore, operations bldg., $500,000-$1,000,000. CD 8/9.

(Continued on page 146)

COMPLEX TO LOOK AT, BUT SIMPLE TO DRIVE: Four traffic levels in a single bridge structure makes a lot of sense to Los Angeles motorists. It enables the traffic of two crossing Freeways to interchange with a simple turn in the desired direction and provides a right-hand take-off and junction, and minimum travel distance, at all times. California Division of Highways Official Photos.

mixed in transit . . .

Because mobile truck mixers travel nimbly where it is not practical for other equipment to operate, ready mixed concrete has long been the preferred material for building and paving concrete highway "structures." Modern highways, turnpikes and expressways, with their entries, exits, grade separations and interchanges, have so increased this use that ARBA estimates show ten new truck mixers are now needed, to pour structures, for every new spreader and finishing machine required to finish pavement slab.

Highway standards are high standards. State Highway Departments, in increasing numbers, specify that ready mixed concrete be processed in truck mixers of proper design, capacity, mixing speed and water control accuracy, as certified by Bureau Rating Plate.

You have a right to insist on this Rating Plate. It certifies compliance with high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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CHAIN BELT COMPANY
Milwaukee, Wis.

CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

IMPERIAL CONSTRUCTION EQUIPMENT CO.
Melrose Park, Ill.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

THE T. L. SMITH COMPANY
Milwaukee, Wis.

WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.

WORTHINGTON CORPORATION
Plainfield, N. J.

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A workman in a Southern fabricating plant is shown welding Connors' angles to form a long span joist.

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H. K. PORTER COMPANY, INC.
OF PITTSBURGH
P. O. BOX 2562 • BIRMINGHAM, ALA.

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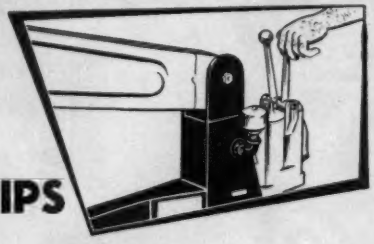

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MID-WESTERN INDUSTRIES, INC. 1009 SOUTH WEST ST., DEPT. N. WICHITA, KANSAS

(Continued from page 144)

Mass., East Boston—RUNWAYS, etc.—State, Airport Management Bd., Boutwell Bldg., Logan Airport, sealcoating runways, $100,000; L-801 development terminal facilities, $350,000, Logan International Airport. Thompson & Lichtner Co., Inc., 8 Alton Place, Brookline, consult. engr.

▲ Mo., St. Louis—BASE FACILITIES, etc.—Air National Guard, Col. Charles H. Dubois, base commander, Lambert-St. Louis Municipal Airport, St. Louis, Zone 21, P. O. imprvt., exten. base facilities, incl. hangar, aircraft parking apron, warehouse, paint, oil and dope storage, motor pool parking area, motor service shop, crash-truck station roads and utilities, engineering service, and aircraft fuel storage, Lambert-St. Louis Municipal Airport. $1,435,486. CD 6/29/44.

▲† Montana—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., 83 family housing units for air force personnel in Glasgow-Miles City area. $1,232,000.

▲† Mont., Glasgow—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., housing at air force base, $1,350,000. CD 2/14.

† Neb., Fort Crook—ROADS, etc.—U. S. Eng., 1709 Jackson St., Omaha, roads and parking areas, Offutt Air Force Base. $577,000.

† Ore., Klamath Falls—HOUSING—P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash., housing at Air Force Base. $999,000. CD 3/14.

▲† Wash., Spokane—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 145 family housing units, at Geiger Air Force Base, $1,957,500. CD 9/18/51.

▲† Wash., Tacoma—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, housing, McChord Air Force Base, $2,025,000.

AMERICANS ABROAD

▲† Antarctic—Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., bases near Little America, on Ross Ice Shelf, Bay of Wales; satellite stations 500 mi. east-south-east of Little America and at South Pole, 700 mi. from main base. Exceed $10,000,000.

PUBLIC BUILDINGS

† Ariz., Yuma—WAREHOUSE, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., plans by J. A. Pomeroy & Co., 727 W. 7 St., Los Angeles, Calif., troop supply warehouse, spray paint facility, fuel storage tanks, NCO open Mess, Yuma Test Station, $350,000. CD 12/11/52.

Calif., Artesia—SCHOOL— Excelsior Union High School Dist., 11923 S. Pioneer Blvd., plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, Artesia High School addns., 12108 E. Del Amo Ave. $350,000.

Calif., Barstow — SHOP — Barstow High School Dist., Barstow, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 1 story, frame, stucco shop bldg. addn. $125,000.

Calif., Costa Mesa—SCHOOL—Costa Mesa Elementary School Dist., Costa Mesa, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, frame, stucco primary school, $500,000. CD 2/24.

▲ Calif., Covina—SCHOOL—Covina School Dist., Covina, plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 132,800 sq. ft., frame, stucco high school. $2,000,000. CD 4/11.

Calif., El Monte—SCHOOL—El Monte Union High School Dist., 630 S. Tyler Ave., plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, Increment No. 2, Arroyo High School addns. $700,000. CD 3/2/53.

Calif., Hawthorne—SCHOOL—Hawthorne School Dist., 319 E. 129 St., plans by Kistner, Wright & Wright, 816 W. 5 St., Los Angeles, 1 story, 27,400 sq. ft. frame, stucco Intermediate School. $500,000. CD 12/10.

† Calif., Lompoc—RECREATION, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, plans by Gerald Henry Beuse, 205 E. Philadelphia St., Whittier, recreation, headquarters, and gymnasium bldgs. U. S. Disciplinary Barracks, $430,000.

▲ Calif., Los Angeles—NEUROPSYCHIATRIC INSTITUTE HOSPITAL—Dpt. P. Wks., 1120 N. St., Sacramento, neuropsychiatric institute hospital at U. C. L. A. for State Dept. of Mental Hygiene, $5,340,000.

Calif., Oakland—STATE OFFICE—State Div. Architecture, P. Wks. Bldg., Sacramento, state office bldg. $409,000.

Calif., Riverside—SCHOOL—Riverside City School Dist., 3954 12 St., plans by Herman O. Ruhnau, Mission Inn, Riverside, Sierra Junior High School. $500,000. CD 5/6/54.

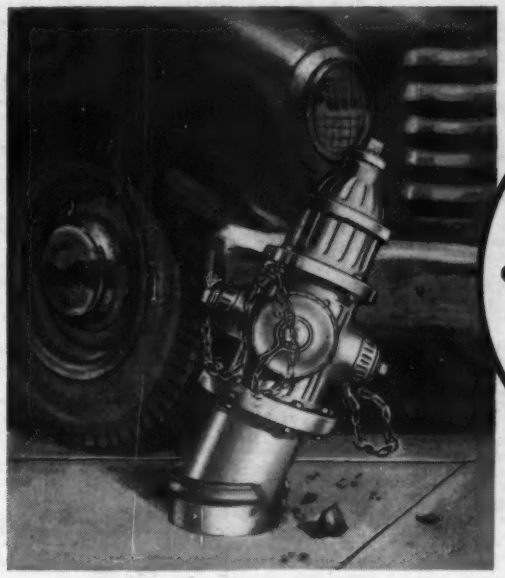
▲ Calif., Sacramento—JAIL—Sacramento Co., Court House, plans by H. Devine, 1012 J St. county jail, $1,200,000. E. Francis, 1012 J St., consult. engr. CD 6/14.

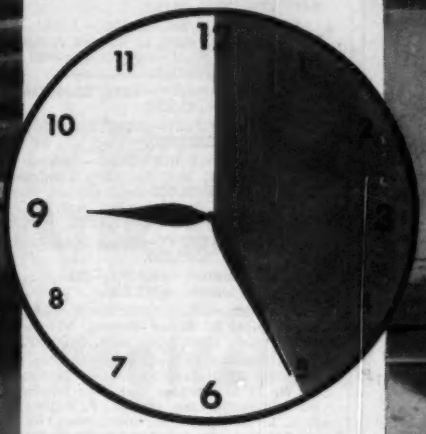
▲ Calif., Yreka—SCHOOLS—Siskiyou Joint Union High School Dist., Yreka, voted $2,047,000 bonds, schools. CD 2/28.

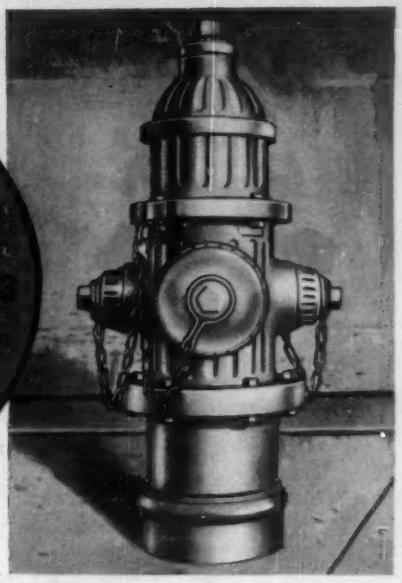
▲Del., Marshalltown — SCHOOLS — Marshalltown Dist. Bldg. Comn., Marshalltown, Junior High School, $1,225,000; Mott School addn. and Marshalltown Elementary School renovation, $950,000.

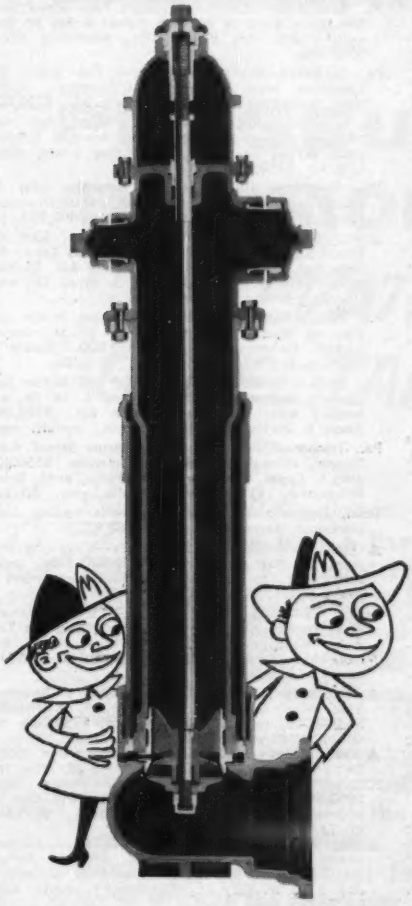
▲ Idaho, Boise — INDUSTRIAL ADMINISTRATION — State, State Capitol, Boise, industrial administration bldg. for state offices, $1,000,000.

(Continued on page 148)









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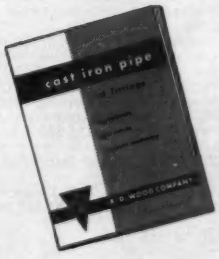

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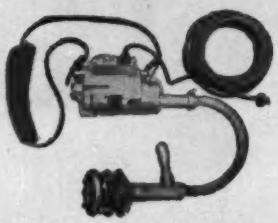

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(Continued from page 146)

Idaho, Pocatello—TRADE and INDUSTRIAL SCHOOL—Idaho State College, Pocatello, plans by Hunter Brewer & Assocs., Pocatello, trade and industrial school, $425,000. CD 7/22/52.

▲ Ill., Downers Grove—SCHOOL—School District 99, 936 Warren St., plans by Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, high school addn., gymnasium, $2,750,000.

Ill., Effingham—ARMORY—State, State Capitol, Springfield, armory. $183,230.

Ill., Freeport—ARMORY—State, State Capitol, Springfield, armory. $183,230.

Ill., Lawrenceville—VOCATIONAL—Lawrenceville Township High School Dist. 71, Harry Keen, supt. Schools, Lawrenceville, $400,000 bond election May 21, vocation bldg. Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis 1, Mo., archt.-engr.

Ill., Litchfield—ARMORY—State, State Capitol, Springfield, armory. $183,230.

Ill., West Frankfort—ARMORY—State, State Capitol, Springfield, armory. $183,230.

Ind., Anderson—COURT HOUSE—Madison Co., Court House, plans by Arthur Henning, 514 Anderson Bank Bldg., county court house addn. $400,000 or more.

Md., Baltimore—HOME—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by Ferdinand P. Kelly, 10 W. 23 St., cottage type home for foster children, W. Cold Spring Lane, for Dpt. P. Welfare. $450,000. R. E. L. Williams, bldg. constr. engr. CD 11/9.

▲Md., Baltimore—SCHOOLS—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, plans by Adams-Rigg, 2513 N. Charles St., Baltimore, Zone 18, masonry Northwest Baltimore Junior High School, $2,750,000; plans by Lucius R. White Jr., 1009 N. Calvert St., Zone 2, East Baltimore Senior High School, corner of City hospital property off Eastern Ave., $3,000,000; plans by Laurence Ewald, 22 E. 25 St., Zone 18, masonry Violetville School addn., $350,000; plans by Edw. H. Glidden, Equitable Bldg., Zone 2, masonry elementary school Cardiff and Charlotte Sts., $900,000; plans by J. Carroll Dunn, 717 Washington Place, Zone 1, masonry elementary school Hamilton and Hazelwood Aves., $900,000. R. E. L. Williams, bldg. constr. engr. CD 11/9.

▲ Md., Rockville—SCHOOL—Montgomery Co. Bd. Educ., Rockville, South Rockville Junior High School, $2,250,000.

Mass., North Attleboro—SCHOOL—Town, School Bldg. Constr., plans by McLaughlin & Burr, 131 State St., Boston, elementary school, Roosevelt Ave., $375,000.

Mass., Waltham—SCHOOL—City, School Dpt., City Hall, plans by Fenton G. Keyes Assoc., 260 Moody St., Waltham, trade school. $500,000.

Mass., Worcester—STOREHOUSE—State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, M-802, 3 story, 100x200 ft. storehouse, State Hospital, $650,000. Hunt & Sayiter Co., 39 Kingston St., Boston, consult. engr. CD 12/17/52.

▲ Mich., Milford—SCHOOL—Bd. Educ., Huron Valley School Dist., plans by Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, high school, North Milford Section, $1,250,000. CD 3/31.

▲ Mich., Troy—SCHOOL—Troy Twp. Bd. Educ., 3179 Livernois St., $1,000,000 bond election June 13, school program, incl. Baker Junior High School addn., new elementary school. CD 2/18.

Minn., Deer River—SCHOOL—Bd. Educ., School Dist. No. 6, D. W. Thompson, supt., plans by A. R. Melander, 603 Alworth Bldg., Duluth, grade school, remodel existing bldg. $610,000.

▲ Mo., St. Louis—SCHOOLS—Bd. Educ., V. Harry Rhodes, comr., School Bldgs., 911 Locust St., Zone 1, bond election May 26, four new schools, ten schools, addns. to two existing schools; auditorium-field house for new technical high school on Northrup Ave., modernization existing bldgs., playground expansion, $16,395,000. CD 6/11/51.

▲† Mo., St. Louis—PLANT—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., plans by Russell & Axon, engrs.-archts., 408 Olive St., Zone 2, lead styphnate and tetracene plant for St. Louis Ordnance Plant, vicinity 4300 Goodfellow Blvd. $1,000,000. CD 10/19/53.

Neb., Nebraska City—SCHOOL—Bd. Educ., Nebraska City, plans by Schaumberg & Freeman, 614 Federal security Bldg., Lincoln, high school $450,000.

N. J., Ancora—SHOP, etc.—Dpt. Institutions & Agencies, State House, Trenton, mechanical shop bldg. $109,000; auto garage, $100,000; warehouse, $110,000; reconstr., paving of Spring Garden Rd. $75,000; road approaches to White Horse Pike; $100,000, walks, roads, curbs at N. J. State Hospital. CD 3/2/53.

N. J., Stratford—SCHOOL—Stratford Bd. Educ., voted bonds, elementary school $350,000. Petty & Croft, 39 E. Main St., Moorestown, archts.

▲ N. Y., Hammels—HOUSING—New York City Housing Auth., 299 Broadway, New York, Zone 7, Hammels Houses, on site bounded by Beach 74 St., Beach 90 St., Rockaway Beach Blvd. and Shore Front Parkway. $35,246,350. CD 4/3/52, under N. Y., Rockaway.

▲ N. Y., Long Island City—SLUM CLEARANCE—New York City Housing Auth., 299 Broadway, New York Zone 7, Plaza Slum Clearance Proj. to provide factories and business bldgs. on tract bounded by Jackson Ave., Bridge Plaza South and Crescent St. $19,000,000. CD 10/18/50.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 299 Broadway, New York, Zone 7, Lincoln Square Houses, 30-acre tract bounded by Broadway, West End Ave., 60 St. and 69 St. $75,000,000.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, Park Row Houses on site bounded by Park Row, New Bowery, St. James Pl., Pearl St. and New Chambers St. $15,440,000. CD 1/5/45.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, Delancey Street Houses on tract bounded by Delancey, Houston, Allen and Forsyth Sts. $23,300,000. CD 1/5/45.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, Seward Park Houses on site bounded by Grand St., East Broadway and Essex St. $27,750,000. CD 1/5/45.

N. D., Garrison—HIGH SCHOOL—Bd. Educ., Garrison, plans by H. M. Leonhard, Bismarck, high school. $425,000.

N. D., Grand Forks—ARMORY—North Dakota National Guard, Bismarck, plans by Wells & Denbrook 425 Kittson Ave., armory, $125,000.

N. D., Minot—ARMORY—North Dakota National Guard, Bismarck, armory. $125,000.

N. D., Oakes—ARMORY—City and North Dakota National Guard, Bismarck, plans by Ritterbush Bros., Bismarck, armory addn. $150,000.

▲ O., Cleveland—FOREIGN MART—City, Office of Port Control, City Hall, 601 Lakeside St., 6 story building to serve as "Foreign Mart" near Lake Erie, $1,000,000.

▲ O., St. Mary's—POWER PLANT—City, expand municipal power plant, incl. 6,000 kw. turbine, etc. $1,007,600. Beiswenger & Hoch, 661 W. Market St., Akron, consult. engrs. CD 4/19.

Pa., Aliquippa—HIGH SCHOOL—Hopewell-Raccoon Independent Joint School Dist., Aliquippa, plans by B. J. McCandless, Ellwood City, 2 story, brick high school addn., Hopewell Twp. $360,000.

Pa., Glen Mills—SCHOOL—Thornbury Twp. School Dist., Glen Mills, plans by W. Pope Barney & Roy W. Banwell, Girard Trust Bldg., Phila., elementary school. $350,000.

Pa., Langhorne—SCHOOL—Middletown Twp. School Bd., Langhorne, plans by Haag & D'Entremont, Jenkintown, elementary school, Chickenfort Rd. $720,000.

Pa., Larchmont—SCHOOL—Marple Twp. School Bd., Newtown Square, plans by Baader, Young & Schultze, 1500 Walnut St., Phila., elementary school, Media Line Rd. $350,000. CD 6/18.

Pa., Perkasie — HIGH SCHOOL — Pennridge Joint Bd. Educ., Perkasie, plans by Micklewright & Mountford, Fallsington, Junior High School addn. $400,000.

▲ Pa., Phila.—HIGH SCHOOL—Bd. Educ., 21st and Winter Sts., plans by Borie & Smith, 1531 Locust St., Girls High School, Broad St. and Olney Ave. $5,000,000. Frederick H. Dechant, 123 S. Broad St., engr. CD 4/23/53.

Pa., Phila.—SCHOOL—Bd. Educ., 21st and Winter Sts., plans by Martin & White, 266 S. 17 St., Adaire-Hackett Elementary School. $950,000. Horace B. Nicholso, 213 S. Broad St., engr. CD 1/26.

Pa., Phila.—SCHOOL—Bd. Educ., 21 and Winter Sts., plans by Supowitz & Demchick, 246 S. 15 St., elementary school, 18th and Vernon Sts. $350,000. Bloom & Dorfman, 1411 Walnut St., consult. engrs.

Pa., Trooper—SCHOOL—Lower Providence School Auth., Trooper, elementary school, at Eagleville. $350,000. John S. Carver, 2112 Spruce St., Phila., archt. Robert McLaughlin, 1411 Walnut St., Phila., engr. CD 3/8.

Tenn., Clarksville—HOUSING—Clarksville Housing Auth., Clarksville, 100-unit housing. $982,922.

▲ Tenn., Nashville—PUBLIC SAFETY—City, City Hall, plans by Marr & Holman, Stahlman Bldg., public safety bldg., to house fire and police headquarters on public square. $1,000,000.

Tenn., Tullahoma—HIGH SCHOOL—City, Tullahoma, plans by Woolwine, Harwood & Clark, American Trust Bldg., Nashville, Zone 3, steel, brick, timber, concrete high school. $930,000. (Correction—architects name). CD 3/16.

▲ Tex., Beaumont—WAREHOUSING—Port of Beaumont, 1255 Main St., voted bonds Apr. 5, warehousing, $1,000,000; turning basin expansion, $750,000; port rehabilitation work, $750,000. CD 2/28.

▲ Tex., Dallas—SCHOOLS—Dallas Independent School Dist., 3700 Ross St., plans by Joseph M. Miles, c/o School Bd., elementary School in Tisinger Tract, $850,000; plans by John P. Wiltshire, 5217 Ross St., elementary school in Glen Oaks Addn., $675,000. CD 12/15.

▲ Va., Williamsburg — HOSPITAL BLDGS. — Commonwealth of Va., State Hospital Bd., Dr. J. E. Barrett, dir., 309 N. 12 St., Richmond, plans by Baskervill & Son, 2313 W. Cary St., Richmond, 2 hospital bldgs. for Eastern State Hospital. $1,500,000. CD 2/5/53.

▲ Wash., Seattle—CONCERT and CONVENTION HALL, etc.,—City, County-City Bldg., Seattle, Zone 4 concert and convention hall, $3,000,000; municipal theater, $1,000,000; remodeling Civic Auditorium as sports arena, $1,500,000. CD 10/2/50.

▲ Wash., Seattle—WAREHOUSE, etc.—City, County-City Bldg., Zone 4, City Light Warehouse and Service Headquarters, Stone Ave. and N. 100 St. $1,275,000.

▲ Wash., Seattle — POWER TUNNEL, etc. — City, County-City Bldg., Seattle, Zone 4, relining Diablo power tunnel, $363,000; rewinding 3 generators and other work at Gorge Powerhouse, $1,254,000. P. J. Raver, city light supt. CD 4/16/48.

▲† Alaska, Adak—HOUSING—17th Naval Dist., Kodiak, housing at naval station, $2,485,000.

▲† Alaska, Big Delta—HOUSING—U. S. Eng., Anchorage, housing at Arctic Training Center. $2,368,000. CD 11/26/52.

(Continued on page 151)

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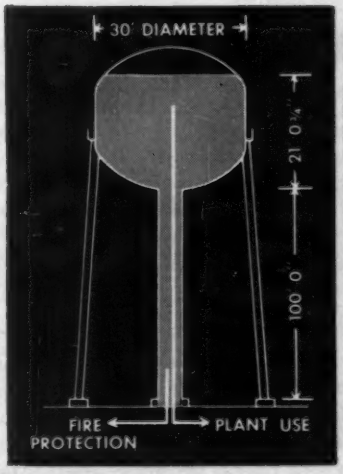

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(Continued from page 148)

▲ **Ont., London**—TEACHERS COLLEGE—Ontario Dpt. Educ., John G. Althouse, dir., Toronto, teachers college. $2,000,000.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—HOTEL—Associated Federal Hotels, Hotel Westwood Ho, Phoenix, 14 story 400-room hotel addn. $3,500,000.

▲ **Calif., Fairway Park**—SHOPPING CENTER—Oliver Rousseau Constr. Co., 1140 Greenwich St., San Francisco, shopping center and 1,700-car parking area, $2,000,000.

Calif., Redding—HOMES—Beresa, Inc., Box 1787, 624 home subdivision, $600,000.

▲ **Calif., Richmond**—SHOPPING CENTER—Stewart Leeb—Realty Co., 133 Kearney St., San Francisco, shopping center, $7,000,000.

▲ **Calif., San Rafael**—HOMES—Phillips & Halperin, 1034 B St., 1,100 home subdivision near here, $2,000,000.

▲ **Calif., Terra Linda**—HOME—Terra Linda Corp., Las Gallinas Valley, 110 home development, $1,210,000.

Ill., Granite City—BANK—First Granite City National Bank, Erwin Niedringhaus, Bd. chn. Edison and Niedringhaus Aves., 28,125 sq. ft. bank, Edison Ave. and 20 St. $350,000.

Iowa., Cedar Rapids—SHOPPING CENTER—Town & Country Shopping Center, 36 and First Ave., Cedar Rapids, plans by Sidney H. Morris & Assocs., 134 N. LaSalle St., Chicago, Ill., shopping center. $400,000. CD 9/23/12.

Kan., Liberal—CHURCH—Liberal Methodist Church, Liberal, church addn. $400,000.

Ky., Covington—SCHOOL—St. Agnes Chapel, c/o Msgr. Chas. Towle, Dixie Hy., plans by Betz & Bankemper, Scott St., school, Lookout Heights, $700,000, Beineke & Ruehlmann, 626 Broadway, Cincinnati, O., consult. engrs. CD 3/10.

Md., Rockville—HOTEL—Jack Wamsley, Gaithersburg, plans by John F. Stann, 706 E. Montgomery St., Rockville, Washington Motor Hotel 97 unit bldg. on 15 acre site new Rte. 240 between Rockville and Gaithersburg, $450,000.

Mo., University City (St. Louis 5 P.O.)—BANK—Delmar Bank of University City, I. Peter Wetzel, pres., 6605 Delmar Blvd., plans by St. Louis Bank & Equipment Co., 906 Sidney St., St. Louis, Zone 4, bank on 350 ft. front site on south side of Delmar Blvd. in 6600 block $600,000.

Nev., Las Vegas—TEMPLE—Church of Jesus Christ of Latter-Day Saints, 47 E. South Temple St., Salt Lake City, Utah, temple. $400,000.

N. H., Manchester—SHOPPING CENTER—James Ferreti, 1157 Elm St., plans by Henry F. Paquin, 242 Presidents Lane, Quincy, Mass., shopping center (5 bldgs.). $350,000.

▲ **N. J., Ocean City**—SHOPPING CENTER, etc.—William Stuempfig 45 N. Maplewood Ave., Phila., Pa., plans by Edwyn Grant Rorke, 5 E. Airy Ave., Norristown, Pa., shopping center and parking area, $1,000,000.

N. Y., Long Island City—APARTMENT—Francis Apartments, c/o A. H. Salkowitz, archt., 37-60 82nd St., Jackson Heights, 6 story, 55-family apartment, 49 St. south of 43 Ave. $350,000.

N. Y., New York—APARTMENT—510 Realty Corp., 2095 Broadway, Zone 23, plans by Boak & Raad, 175 Fifth Ave., Zone 10, 15 story apartment, 504-10 W. 36 St. $485,000.

▲ **N. Y., New York**—OFFICE—The 185 Broadway Corp., c/o Arnold A. Arbeit, archt., 154 Nassau St., Zone 7, 22 story air-conditioned office, Broadway and Dey St. $1,300,000.

▲ **N. Y., Orchard Park**—SHOPPING CENTER—Benderson Development Co., 28 Wasson St., Buffalo, plans by Jack Kushin, consult. engr.-archts., 1487 Hertel Ave., Buffalo, 100,000 sq. ft. colonial brick, steel shopping center, Orchard Park Rd., $1,000,000.

▲ **N. C., Raleigh**—Y.M.C.A.—Young Mens Christian Assn., Wyatt Taylor, dir., 7 E. Edenton St., Raleigh, new Y.M.C.A., Hillsboro St. $1,000,000. CD 3/6/47.

N. D., Minot—SCHOOL—St. Leo's Parish and Little Flower Parish, Minot, Notre Dame High School. $400,000.

▲ **O., West Carrollton**—HOUSING—South Dayton Constr. Co, Miamisburg-Centerville Rd., Miamisburg, Dayton, 150 homes on 103-acre site, Alexandersville Rd., north of here, south of U. S. 25. $2,350,000.

▲ **Ore., Portland**—STORE—Fred Meyer, Inc., 721 S. W. 4 St., plans by John F. Jensen, 2266 N. W. Lovejoy St., 2 story, 200x250 ft., department store, at Gateway Shopping Center, $1,500,000. Olds & King, lessee.

▲ **Pa., Bryn Mawr**—OFFICE—Foley-McManus, 1016 Warrior Rd., Drexel Hill, Phila., office bldg. and parking facilities, Lancaster Ave. $1,000,000. George Greeby Curren, Arcade Bldg., Norristown, consult. engr.

Pa., Bala Cynwyd—Office—Chelten Realty Co., 403 W. Woodlawn St., Phila., office City Line and Bala Aves. $700,000.

▲ **Pa., Elkins Park**—SYNAGOGUE, etc.—Reform Congregation of Keneseth Israel, Elkins Park, plans by Israel Demchick & David Supowitz, 246 S. 15 St., Phila., synagogue and school, community center and parking area $1,000,000. Bloom & Dorman, 1411 Walnut St., Phila., consult. engrs.

Pa., Glenside—THEATRE—Owner c/o David Supowitz, archt., 246 S. 15 St., Phila., theatre, $350,000.

Judges of 1955 SIGNIFICANT PLANT AWARDS say:

"Quite a roof! . . No painting involved either inside or out"

Among the 1955 winners of FACTORY MANAGEMENT AND MAINTENANCE's Significant Plant Awards is Sunstrand Machine Tool Co. of Belvidere, Ill. This modern plant received a special award going to "plants that are outstanding in some one respect, or in which there is an unusual feature of broad significance."

Sunstrand is cited for its installation of Ingersoll Roof Deck. Here are some of the words used by FACTORY to describe the decking:

"Quite a Roof! . . . This construction provides high rigidity and strength with 8-ft. purlin spacing. This despite the fact that the panels have full freedom for expansion and contraction . . . high reflective property of aluminum cuts summer heat. No painting involved either inside or out."

The Ingersoll Roof Deck used in the new Sunstrand plant is a system of full-floating panels that simply clip to galvanized steel sub-purlins which are precision spaced and welded to the building purlins.

No field or maintenance painting is necessary . . . erection is fast and easy. The permanently bright surface of the panels improves plant lighting.

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Available in aluminum and porcelain enamel

Ingersoll Roof Deck is available in either aluminum or porcelain enamel. The latter offers all the advantages described above . . . plus protection where corrosion or excessive moisture is a problem . . . or where the special gleaming look of double coats of porcelain enamel is an advantage.

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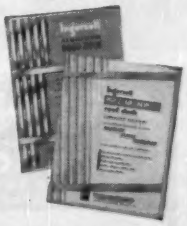

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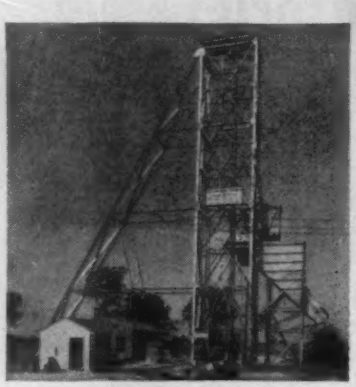

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▲ **Pa., Merion**—SYNAGOGUE—Temple Adath Israel, c/o Myers L. Girsh, Old Lancaster Rd. and Highland Ave., plans by Israel Demchick, 246 S. 15 St., Phila., synagogue, $1,250,000.

Pa., Phila.—SYNAGOGUE—Adath Jeshurun Congregation, 2109 N. Broad St., plans by Charles R. Greco, 11 Beacon St., Boston, Mass., synagogue, 69 St. and Old York Rd. $350,000.

▲ **Pa., Phila.**—APARTMENT—Philip Plotnick & Sons, Manheim and Coulter Sts., Phila., plans by Aaron Colish, 117 S. 17 St., 110-unit apartment bldg. and parking facilities, $2,000,000.

▲ **Tex., Beaumont**—SHOPPING CENTER—Beaumont Village Corp., Beaumont, plans by Werlin & Kiefner, Assoc., archts., 3501 Buffalo Dr., Houston, 165,000 sq. ft. rein.-con., frame shopping center, Voth Rd. and Lucas Dr. $1,500,000. Robert L. Reid, 2506 Richton St., and James Howard & Assocs., 4101 San Jacinto St., Houston, consult. engrs.

▲ **Tex., Farmers Branch**—DWELLINGS—Wilson & J. D. Brown, Farmers Branch, 25 brick dwellings, $369,000; 35 frame dwellings, $376,500; 25 stone, brick dwellings, $373,115 in Valwood Park.

▲ **Tex., Farmers Branch**—DWELLINGS—Sol Franck, 1315 Cadiz St., Dallas, 28 frame, masonry trim dwellings, $365,000; 33 frame dwellings, $376,200; 36 frame dwellings, $388,850; 31 frame, brick trim dwellings, $369,165, in Valwood Park.

Tex., Farmers Branch—DWELLINGS—Hines Builders, Inc., 2021 E. Main St., Grand Prairie, 30 frame dwellings, $359,000; 24 brick dwellings, $361,000, in Valwood Park.

▲ **Tex., Farmers Branch** — DWELLINGS — Laughlin & Silver, 1502 Centerville Rd., Dallas, 29 frame, masonry dwellings, $352,000; 36 masonry dwellings, $379,000; 32 frame, brick trim dwellings, $367,125, in Valwood Park.

Tex., Farmers Branch—DWELLINGS—Lewis & Lamberth, 3918 Gaston St., Dallas, 27 masonry dwellings, $363,500; 32 frame, masonry dwellings, $379,400, in Valwood Park.

Tex., Farmers Branch—DWELLINGS—D. T. Macon, Farmers Branch, 44 dwellings, $385,000.

▲ **Tex., Houston**—DWELLINGS—H. Edward Brown, Frank Teague & Paul H. Wolf, Union Natl. Bank Bldg., Houston, Proj. 9, 29 dwellings, $350,750; Proj. 8, 34 dwellings, $370,195; Proj. 10, 38 dwellings, $391,450; Proj. 11, 32 dwellings, $366,175; Proj. 12, 36 dwellings, $381,775 for Negroes in addnl. sect. of tract adjacent to Lincoln City.

▲ **Tex., Houston**—DWELLINGS—Coronado Homes Management, Inc., c/o Joel E. Barnett, 2108 6 St. Houston, (A) 30 brick dwellings, $373,000, (B) 24 brick dwellings, concrete slab fdn. $348,500, (C) 33 brick dwellings, concrete slab fdn. $384,485, (D) 27 brick dwellings, concrete slab fdn., $372,450., section in "Tanglebrier Addition".

Tex., Houston — COMMUNITY CENTER — Leon Green, 1836 Wichita St., plans by Bailey A. Swenson, 3106 Brazos St., community center off 7800 Blk. Katy Rd. $750,000.

▲ **Tex., Houston**—DWELLINGS—Memorial Forest, c/o Robert P. Puig & H. W. Edmunds, 3829 Villanova St., Group 21, 21 dwellings, $389,150; Group 2, 16 dwellings, $352,000; Group 3, 10 dwellings, $364,750; Group 4, 18 dwellings, $382,125; Group 5, 12 dwellings, $375,000; Group 6, 14 dwellings, $359,500, across Memorial Dr. from Warrenton Addn.

▲ **Tex., Houston**—DWELLINGS—Memorial Pines, c/o Robert P. Puig & H. W. Edmunds, 3829 Villanova St., 10 masonry dwellings, $350,000; 14 all masonry dwellings, $395,000; 12 all masonry dwellings, $375,000, on Tanglewood Rd. across from Woodlawn Hollow Addn.

▲ **Tex., Houston**—STORES and SUPERMARKETS—J. Weingarten, Inc., 600 Lockwood St., stores and supermarkets, No. 1, Longpoint and Wirt Rds. $350,000; No. 2, Stella Link Rd. and S. Braeswood Blvd. $350,000; No. 3, Post Oak and Westheimer Rds. $350,000; No. 4, Gulfgate Shopping Center on Freeway, $350,000; expans. of store space at existing plant, Store No. 5, on 27-acre tract, Lockwood Dr. and Navigation Blvd. $365,000; stores and supermarkets, No. 6, $350,000; No. 7, $350,000; No. 8, $350,000; No. 9, $350,000; No. 12, $350,000; No. 13, $350,000; No. 14, $350,000; No. 15, $350,000; No. 16, $350,000; No. 17, $350,000. CD 6/22/53.

▲ **Tex., Kilgore**—FINE ARTS, etc.—Kilgore College, Kilgore, plans by Preston M. Geren, Fort Worth Natl. Bank Bldg., Fort Worth, fine arts $350,000; engineering-science, $390,000; student center-vocational addn. $375,000.

▲ **Tex., La Marque-Texas City**—DWELLINGS—Lewis O. Tyra, c/o Tyra Lumber Co., 5519 Lawndale St., Houston, (J) 30 dwellings, $350,000 (K) 35 dwellings, $378,190 (L) 41 dwellings, $390,000 (M) 45 dwellings, $420,500 (N) 38 dwellings, $382,465 (O) 28 dwellings, $365,000.

▲ **Tex., Tyler**—COTTAGES—Tyler Home Builders Assn., Tyler, Unit 1, 39 brick veneer cottages, $350,000; Unit 2, 45 brick veneer cottages, $360,000; Unit 3, 48 brick veneer cottages, $395,000; Unit 4, 43 brick veneer cottages, $375,000, for Negroes.

▲ **Tex., Waco**—BUSINESS ADMINISTRATION—Baylor University, 1401 S. 5 St., business administration. $1,500,000. CD 4/11/52.

Va., Roanoke—STORE—S. H. Heironimus Co., Inc., 38 Campbell Ave. SW., plans by Hayes, Seay Mattern & Mattern, 1615 Franklin Rd., department store alterations $700,000.

Wis., Menasha—OFFICE—Kimberly-Clark Corp., 128 N. Commercial St., Neenah, plans by Skidmore, Owings & Merrill, 100 N. Monroe St., Chicago, Ill., 1 and 2 story, 100,000 sq. ft. office bldg.

▲ **Alta., Edmonton**—DEPARTMENT STORE—Simpson-Sears Ltd., 176 Younge St., Toronto, Ont., plans by F. S. Corley, c/o owner, ch. archt., department store on 10-acre site. $5,000,000.

Ont., London—STORE—F. W. Woolworth Co. Ltd., 33 Adelaide St. W., Toronto, new 3 story, bsmnt. store. $500,000.

▲ **Ont., Oakville**—HOUSING—A. E. LePage Ltd., 142 Colborne St. W., housing in Trafalgar Twp., near here. $1,100,000-$2,200,000.

▲ **Que., Montreal** — HOUSING — Manoir Development Corp., c/o Harry Stilman, archt., 2183 Maplewood Ave., housing development on new streets in St. Vincent de Paul suburban area, $1,500,000.

INDUSTRIAL BUILDINGS

▲ **Ark., West Memphis**—POWER PLANT—Mississippi Valley Generating Co. (sub. Middle South Utilities Co.) 2 Rector St., New York 6, N. Y., Dixon-Yates Atomic Energy Power Plant. $107,000,000. Ebasco Services, Inc., 2 Rector St., New York 6, N. Y., engr.-archt.-constr. mgr.

Del., Houston—PLANT—Libby, McNeil & Libby, South Packers and W. Exchange Aves., Chicago, Ill., frozen storage and freezer plant. $250,000. C. Jones Buehler, 1422 Chestnut St., Phila., Pa., consult. engr.

▲ **Ga., Atlanta**—PLANT—National Container Co., 7 Central Park W., New York, N. Y., corrugated box plant. $1,500,000.

▲ **Ill., Dixon**—PLANT EXPANSION—Medusa Portland Cement Co., Midland Bldg., Cleveland, O., plant expansion. $8,000,000.

▲ **Ind., Terre Haute**—PLANT—Allis-Chalmers Mfg. Co., 1953 Thomas St., Milwaukee 1, Wis., plant to mfg. electrical transformers and circuit breakers. $9,500,000. CD 1/13/54.

▲ **La., Shreveport**—WAREHOUSE—J. Weingarten, Inc., 600 Lockwood St., Houston, Tex., No. 11, warehouse for food storage, $3,500,000.

Me., Bryant Pond—PLANT—Stowell Silk Spool Co., Bryant Pond, plans by Leo F. Caproni & Assoc., 1221 Chapel St., New Haven, Conn., 77x180 ft. cinder block mfg. plant. $100,000.

Mass., Shrewsbury—FACTORY—Parker Metal Goods Co., 161 Summer St., Worcester, 120x225 ft. factory, $500,000. Charles Lapino, 98 Calumet Ave., Worcester, consult. engr.

Mich., Marysville—PLANT—St. Clair Rubber Co., S. R. Livingstone, pres., Port Huron, plant addn. $500,000.

▲ **Missouri**—PLANT—Union Electric Co. of Missouri, 315 N. 12 Blvd., St. Louis, Zone 1, electric power generating plant located in St. Louis metropolitan area. $36,500,000, definite site undecided St. Louis or St. Charles Co.

▲ **Mo., St. Louis** — PLANT — Mallinckrodt Chemical Works, 3600 N. 2 St., Zone 7, modernization, expansion of plant facilities, $620,000; new plant for extraction of columbian-tentalum and uranium values from concentrates. $1,000,000.

Neb., Omaha—PLANT—Stauffer Chemical Co., 636 California St., San Francisco, Calif., chemical plant. $250,000-$500,000.

▲ **Oregon**—VENEER PLANT—Crown Zellerbach Corp., Public Service Bldg., Portland veneer plant, Portland area (location indefinite). $1,000,000. Central Engineering Co., 6363 Airport Way, Seattle, Wash., consult. engr.

▲ **Pa., Oil City**—PLANT ADDNS.—The United Natural Gas Co., Oil City, plant addns. for imprvs. in production, storage, transmission and distribution facilities. $2,830,000.

Pa., Phila.—MAINTENANCE and SERVICE—Bucks Rental Co., c/o Sanders & Thomas Assocs., archts., Pottstown, truck maintenance and service bldg. $100,000.

Pa., Phila.—BUS TERMINAL—Phila. Transportation Co., Mitten Bldg., bus terminal and parking facilities. $250,000. H. L. Thompson, c/o owner, ch. engr.

S. C., Charleston—PLANT—Manhattan Shirt Co., 444 Madison Ave., New York, N. Y., masonry steel mfg. plant. $500,000.

▲ **S. C., Columbia**—PLANT—General Electric Co., River Rd., Schenectady, N. Y., plans by Robert & Co. Assoc., archts.-engrs., 96 Poplar St., N. W. Atlanta, Ga., plant 9 mi. northwest of here. $6,500,000.

Tex., Dallas—SERVICE and STORAGE—Drilling & Service Co., Inc., 3027 Elm St., plans by Smith & Mills, Mercantile Bank Bldg., service and storage, Central Expressway and Yale Blvd. $175,000.

Tex., Dallas—WAREHOUSE—U. S. Plywood Corp., Div. Headquarters, H. C. McFarland, 2825 Manor St., 45,000 sq. ft. warehouse, Denton Dr. $325,000.

Tex., Deer Park—INDUSTRIAL—Reichold Chemicals. Inc., 2301 Commerce St., Industrial bldg., 16½ acre tract. Over $300,000.

▲ **Tex., High Island**—PLANT—Sulphur Exploration Co., c/o Marvin E. Weaster, 2260 Jean St., Houston, sulphur mining and plant will be Frasch-type with daily capacity 500-tons. $1,000,000.

Tex., Houston—WAREHOUSE, etc.—F. W. Heitmann Co., 113 Main St., plans by David O. Roemer, 2114 W. Holcombe St., warehouse-office, 10½ acre tract Old Clinton Rd. and Kress St. $700,000. CD 5/19/54.

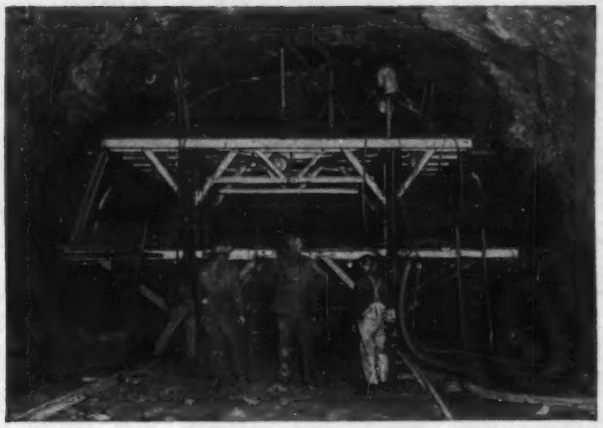
Tex., Houston—WAREHOUSING, etc.—J. Weingarten, Inc., 600 Lockwood St., No. 10, addnl. expansion warehousing and frozen foods spaces. $650,000.

Tex., San Antonio—WAREHOUSE—Central Warehouse & Storage Co., 220 Burleson St., plans by John Chenault, 1506 Fredericksburg Rd., 25,000 sq. ft. central warehouse, Coliseum Dr. $200,000.

(Continued on page 154)

Driving to Make Millions of Motorists Happy

Du Pont "blasting team" makes rock easy to handle, on $100,000,000 Third Lincoln Tunnel Tube Project



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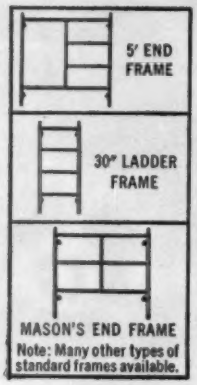

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(Continued from page 152)

▲ Va., Richmond—PLANT—Reynolds Metals Co., Reynolds Metals Bldg., Zone 19, aluminum extrusion plant. $3,000,000.

Ont., Ingersoll—PLANT—Ingersoll Machine & Tool Co., A. G. Warden, mgr., Ingersoll, plant addn. $100,000.

Ont., Lambeth—FACTORY—Tay-Craft Marine Mfg. Co., 1023 Dundas St., London, 103x108 ft., cement block factory. $100,000.

Ont., Wheatley — COLD STORAGE — Omstead Fisheries, Wheatley, 1 story cold storage bldg. $100,000.

Que., Three Rivers—PLANT—Canadian Westinghouse Co. Ltd., 3350 Royale St., 200x232 ft., concrete, brick, steel plant extension. $250,000.

UNCLASSIFIED

▲ Calif., Hayward—SWIMMING POOLS, etc.—Hayward Recreation District, Hayward, $4,500,000 bond election June 7, swimming pools, community bldgs., parks and other facilities.

▲ Calif., San Diego—TERMINAL—City, Civic Center, voted $9,460,000 bonds 10th Ave. shipping terminal, quayside wall construction, transit sheds, open storage, dredging, water, sewers, underground electric lines, lighting railroads. CD 1/18.

† Connecticut—DEFENSE INSTALLATIONS—U. S. Army, c/o Conn. National Guard, Maj. Gen. Frederick G. Reincke, State Adjutant Gen., Armory, Hartford, Defense Installations to augment "NIKE" South Windsor, East Hartford, Manchester, Glastonbury, Rocky Hill, Newington, West Hartford and Windsor. $1,000,000.

▲ Conn., Hartford—STADIUM—City, Municipal Bldg. 550 Main St., municipal stadium. $2,000,000. A. John Macchi, 57 Farmington Ave., engr. CD 2/19/52.

Ga., Covington—NATURAL GAS SYSTEM—City, 107 Clark St., natural gas sys. $600,000. Porter, Barry & Assocs., 1730 Main St., Baton Rouge, La., engrs. CD 6/10/53.

▲ Ill., Anna—MONUMENTAL CROSS—Bald Knob Christian Foundation, Anna, monumental cross, atop Bald Knob Mountain, near here. $3,000,000. CD 4/26/46.

Indiana—RURAL DISTRIBUTION LINES—Jay County Electric Membership Corp., Portland, 100 mi. rural distr. lines and sys. imprvs., Jay Co. $595,000. CD 10/21/48.

Iowa—RURAL DISTRIBUTION LINES—Adams County Co-operative Electric Co., Corning, 3.5 mi. rural distr. lines, 12 mi. tie lines, sys. imprvs., headquarters facilities addn. $135,000. Stanley Eng. Co. Muscatine, consult. engr. CD 4/25.

Kansas—RURAL DISTRIBUTION LINES—Central Kansas Electric Co-operative, Great Bend, 233 mi. rural distr. lines, sys. imprvs., 11 mi. transmission lines, 9 mi. tie lines, Barton Co. $425,000, Frank Horton & Co., Lamar, consult. engrs. CD 4/25.

Minn, Perham—TELEPHONE LINES—East Otter Tail Telephone Co., R. B. Arbig, pres., Perham, rehabilitate lines, 170 mi. new line, dial central offices, Otter Tail and New York Mills, Otter Tail Co. $476,000.

▲ Missouri—SYSTEM IMPROVEMENTS—Citizens Electric Corp., 216 Merchants St., Ste. Genevieve, sys. imprvs. incl. addnl. sub-station facilities, 4 mi. transmission lines, 9 mi. tie line, 30 mi. addnl. distr. line, Ste. Genevieve Co. $1,330,000. Drazen & Assoc., 7912 Bonhomme Ave., Clayton, Zone 24, consult. engrs. CD 1/14/53.

Missouri—GAS DISTRIBUTION SYSTEM—Missouri Utilities Co., Cape Girardeau, natural gas distr. sys. and connection with Panhandle Eastern Pipe Line Co. trunk line 4 mi. northeast of city limits, California. $125,000.

▲ O., Cleveland—SUBWAY—Cuyahoga Co., Court House, subway. $35,000,000. Praeger-DeLeuw-Cutting (Praeger-Kavanaugh, 126 E. 38 St., New York, N. Y.; DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill.; Richard Hawley Cutting,, 2074 E. 36 St., Cleveland, O.) consult. engrs. will make complete study. CD 11/5/53.

Oklahoma—RURAL DISTRIBUTION LINES—Rural Electric Co-operative, Lindsay, 152 mi. rural distr. line and sys. imprvs., Garvin Co. $390,000. CD 2/12/48.

† Pa., Phila.—PIPING SYSTEM—Dpt. Navy, Phila. Naval Base, Phila., Pa., exhaust steam piping system, Naval Boiler & Turbine Laboratory. $170,000. McConothy Hoffman & Assocs., 150 Broadway, New York, N. Y., consult. engrs.

Tex., Dallas—TELEVISION STATION—Dallas Independent School Dist., 3700 Ross St., bond election May 7, television station (non-commercial educational type) Channel 13 allotted. $250,000. CD 11/24.

Tex., Sargent—CLUB, etc.—Holiday Beach Company, c/o W. Arthur Combs, State National Bldg., Houston, plans by Truman B. Douty, 7335 Dixie Dr., Houston, (bldg. only) sportsman's club, $350,000; water system, $50,000; sanitary-storm sewers, open drainage, $80,000; harbor and swimming pool, $100,000, for club people and 350 bldg. lots in Club Tract, near here.

▲ Utah—TRANSMISSION LINE—Utah Power & Light Co., Kearns Bldg., Salt Lake City, 130,000 volt line from Castle Gate to Moab, $1,500,000; 61 mi. 69,000 volt line from Joab to Monticello, $400,000.

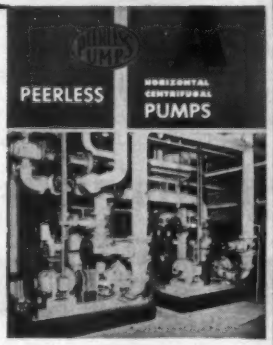
West Virginia—RURAL DISTRIBUTION LINES—Harrison Rural Electric Co-operative, Clarksburg, 35 mi. rural distr. lines, headquarters facilities, and sys. imprvs., Harrison Co. $192,000. CD 10/22/48.

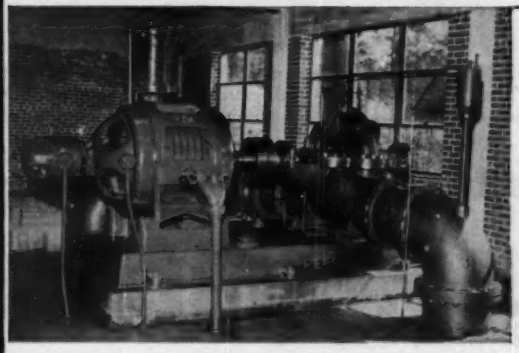
▲ Ontario and Quebec—GAS PIPE LINE—Trans-Canada Pipe Lines Ltd., 505 85th Ave. W., Calgary, Alta., 370 mi. gas pipe line from Toronto, Ont., to Montreal, Que., $29,000,000. Bechtel-Mannix-Hester Co., 825 Eglinton Ave. W., Toronto, Ont., and Canadian Bechtel Ltd., 44 King St. W., Toronto, Ont., consult. engrs.

look AT THE PUMPING PROBLEM *two ways*

VERTICAL

HoRizontal





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In the picture at the top above, a concentrated solution of sulphuric acid and aluminum sulfate is being pumped by Peerless vertical industrial service pumps. To find out all about them request Peerless Bulletin No. B-505.

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ENR

New 42,000 lbs. GVW for real money-making capacity! Ford Tandem Axle T-800 hauls up to 3 tons more payload than other trucks in its class. Optional 11,000-lb. front axle for greater capacity. Power Steering standard. Auxiliary transmissions, full-air brakes available. Short Stroke 170-h.p. V-8.

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Differences between outdated long-stroke engines and Ford's modern Short Stroke design *seem* small, but they're *not*.

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Be sure that your next truck has a modern short-stroke engine. You *will* be sure if it's a Ford Truck! Because Ford *and Ford alone* gives you a Short Stroke engine in *every* model!

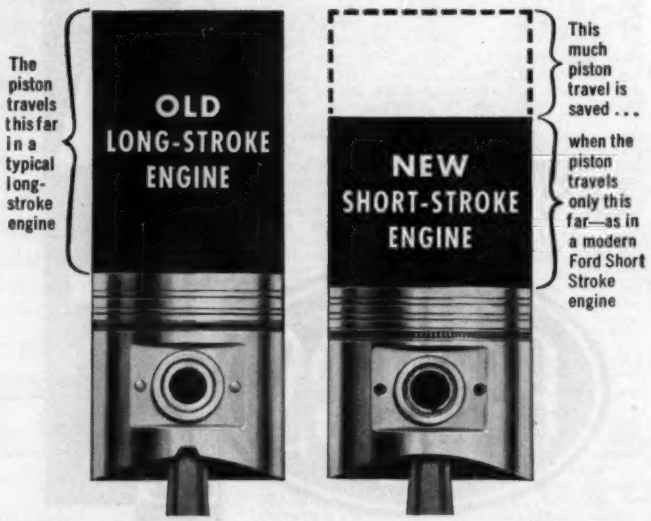
The piston travels this far in a typical long-stroke engine
OLD LONG-STROKE ENGINE
NEW SHORT-STROKE ENGINE
This much piston travel is saved . . .
when the piston travels only this far—as in a modern Ford Short Stroke engine

Diagram shows difference in piston travel between typical long-stroke engine and *modern* Ford Short Stroke design. Ford pioneered in Short Stroke design. And only Ford gives you a Short Stroke engine in every truck. That's one reason why Ford was first in sales gains in 1954—the *only* leading make to increase sales!

FORD TRIPLE ECONOMY TRUCKS

THE MONEY MAKERS FOR '55

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 23 Connecticut — May 26 Massachusetts
STREETS AND ROADS
May 17 Massachusetts — May 23 Connecticut

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., ..artford,
Savin Constr. Corp., 11 Village St., East Hartford, Conn., CA, **$1,272,470**, est. $1,200,000, substructure State St. Bridge over Connecticut River, Hartford and East Hartford. Bids Mar. 21. CD 3/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. F. Rand & Son**, 57 Sudbury St., Boston, Mass. LB **$1,037,589**. Regional High SCHOOL, LINCOLN-SUDBURY, MASS. Lincoln-Sudbury Regional School Dist. Comn., Town Hall, Lincoln, Mass. Bids Apr. 28. CD 3/29.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 26 New York — May 27 Pennsylvania
STREETS AND ROADS
May 20, 26 New Jersey — May 26 New York
About May 27 and May 7 Pennsylvania

▲† **Maryland**—BA 5/19—U. S. Eng., First and Douglas Sts. N.W., Wash. D. C., dam pumping station, 2 high voltage, sub-stations, bridge tunnel outlet structure on Potomac River at Little Falls, Montgomery Co. $5,000,000. Extended date, Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 4/4.

▲† **N. Y., Watervliet**—BLDGS. REHABILITATION—BA On Or About 6/7—U. S. Eng., 111 E. 16 St., New York, Zone 3, rehabilitation of Bldgs. 25, 36 and 125, Watervliet Arsenal, ENG-30-075-55-475. $1,000,000-$1,500,000. Plans deposit $25. CD 2/17.

BIDS ASKED—BUILDINGS

Pa., **Tylersburg** — HIGH SCHOOL — BA 5/19 — North Clarion Joint School Dist., Leeper, and State School Auth., 101 S. 25 St., Harrisburg, 1 story, 41,000 sq. ft. brick Junior-Senior High School. $780,000. Plans deposit $25. Leon C. Hufnagel, 10 Grant St., Clarion, archt. CD 9/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Great Lakes Dredge & Dock Co.**, 17 Battery Pl., New York, N. Y., CA **$1,449,734**, est. $1,113,762 dredging to depth of 37 ft. below mean low water incl. removal approx. 510,900 cu. yd. place measurement, all material, incl. ledge rock from New York and New Jersey Channels, Sect. 4, Area 2, Richmond Co., N. Y. and Union Co., N. J., CIVENG-30-075-55-47, NEW YORK and NEW JERSEY. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 4/25, under LB.

▲† **Morrison-Knudsen Co., Inc.**, 122 E. 42 St., New York, N. Y., and **Peter Kiewit Sons Co.**, 1024 Omaha Natl Bank Bldg., Omaha, Neb. LB **$6,452,450**, est. $6,276,535, excavate 12,550,000 cu. yd. earth in central part, Long Sault Canal, to constr. canal approx. 6 mi. long extending over land and east from just west of Hopsons Bay 3 mi. north of Massena, St. Lawrence Co.; excavate 175,000 cu. yd. earth to constr. 20,000 ft. of dikes with 3,000,000 cu. yd. embankment and 100,000 cu. yd. stone, riprap; line dikes, seeding, fertilizing, mulching and misc. work for St. Lawrence Seaway, CIVENG-30-023-55-53, NEW YORK. U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo 7, N. Y. Bids May 3. CD 2/21.

▲† **B. J. Lucarelli & Co.**, 22 Orchard St., Jersey City, N. J., LB **$1,200,336**, hangar, storage facilities, shops, etc., ENG-36-109-55-64, WRIGHTSTOWN, N. J., U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Apr. 22. CD 3/23.

▲ **Fish Engineering Corp.**, M & M Bldg., Houston, Tex. CA **$2,500,000**. design and construct steel, rein.-con., compressor station, 16,000 h.p. compressor, Harrison Valley, Potter Co., PENNSYLVANIA. New York State Natural Gas Co., 140 Stanwix St., Pittsburgh, Pa. CD 9/7/48.

† **E. J. Albrecht**, 2626 W. 26 St., Chicago, Ill. CA **$817,480**. local flood protection proj. channel imprv. North Branch Potomac River Sect. 1, Cumberland, Md. and Ridgeley, W. Va., MARYLAND and WEST VIRGINIA. U. S. Eng., First and Douglas Sts. N.W. Wash. 25, D. C. Bids Apr. 13, awarded May 2. CD 4/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Amherst Park Estates, Inc.**, c/o D. & S. Constr. Co., 166 Rumsey Rd., Buffalo, N. Y. Owner Builds. **$2,400,000**. 80 to 84 ranch HOMES, Sheridan Dr., east of North Forest Rd., AMHERST, N. Y.

Siegfried Constr. Co., Inc., 7 N. Pearl St., Buffalo, N. Y., LB **$818,470**, general constr. Broadway MARKET-GARAGE addn., 2nd floor ramp and parking, BUFFALO, N. Y. City, Dpt. P. Wks., City Hall, Buffalo, N. Y. James, Meadows & Howard, 250 Delaware Ave., Buffalo, N. Y., engrs.-archts.

▲ **Peter Santin Constr. Co., Inc.**, 4 Woodland Terrace, Buffalo, N. Y. Own Forces. **$15,000,000**. 1,000 HOMES, 225-acre site between George Urban Blvd. and Genesee Sts., CHEEKTOWAGA, N. Y.

▲ **Keem & Co.**, 49 Eagan Dr., Lackawanna, N. Y. Own Forces. **$1,200,000**. 40 brick HOMES, Clark St., east of McKinley Parkway, HAMBURG, N. Y.

Bira, Inc., 61 Broadway, New York 6, N. Y. Owner Builds. **$683,000**, APARTMENT, 229-33 E. 69 St., NEW YORK, N. Y. CD 7/14.

▲† **Charles Simkins & Sons Inc.**, P. O. Box 110, Perth Amboy, N. J., LB **$2,246,409**, Sch. A, general contract, interior work; LB **$2,359,594**, Sch. B, exterior work 112 BARRACKS BLDGS. rehabilitation, alterations; LB **$531,674**, Sch. C, interior work 28 BARRACKS BLDGS., FORT DIX, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Apr. 26. CD 4/5.

Kelleher & Yagle, Inc., 533 Chester Pike, Prospect Park, Pa., Separate Contracts, **$900,000**. RESIDENTIAL DEVELOPMENT, Hessian Ave., NATIONAL PARK, N. J. Erling Wenge, McClatchy Bldg., Upper Darby, Pa., archt.

▲ **Miles H. Robinson Jr.**, 618 West Ave., Ocean City, N. J., CA **$5,880,000**. RESIDENTIAL DEVELOPMENT, Bartram Lane, etc., OCEAN CITY, N. J. Merion Park Development Corp., Att. Morris Grove, Broad St. and Columbia Ave., Phila., Pa. Lewis J. Cowan, 1505 Pine St., Phila. Pa., archt.

▲ **Sloop Creek Estates**, att. Fred Raniero, 305 Simpson Ave., Seaside Heights, N. J., Separate Contracts. **$14,000,000**, 2,000 unit RESIDENTIAL DEVELOPMENT, Berkeley Twp., SEASIDE HEIGHTS, N. J. Robert B. Myers, Sea Girt, archt.

▲ **H. E. Stoudt & Sons, Inc.**, 1212 S. 5 St., Allentown, Pa., CA **$850,000**. DORMITORY; CA **$1,570,000**. PACKER HALL addn., alterations, BETHLEHEM, PA. Lehigh University, Bethlehem, Pa. Bids Apr. 14. CD 3/30.

▲ **Altman Builders Corp.**, 302 Levering Mill Rd., Bala Cynwyd, Pa., CA **$2,711,500**, 187 RESIDENCES, Whitpain Twp., CENTRE SQUARE, PA. Centre Square Green, Inc., 302 Levering Mill Rd., Bala Cynwyd, Pa., Theodore Brandow, 5935 Windsor Ave., Phila., Pa., archt.

▲ **George A. Fuller Co.**, 1st Natl. Bank Bldg., Pittsburgh, Pa., CA **$1,500,000**. 1 story 150,000 sq. ft. brick, block, steel frame WAREHOUSE, CLARION, PA. Owens Illinois Glass Co., Ohio Bldg., Toledo, O. Hunting, Larsen & Dunnells, Century Bldg., Pittsburgh, Pa. archts.

Committee on Masonic Homes, Elizabethtown, Pa., rejected bids for AUDITORIUM and LODGE BLDG., ELIZABETHTOWN, PA. LB **$700,000**. Will re-advertise. CD 3/9, under LB.

Hallowell & Wooley, Inc., 3383 Philmont Ave., Huntingdon Valley, Pa., Separate Contracts. **$725,000**. RESIDENTIAL DEVELOPMENT, 2nd St. and Wycombe Ave., TULLYTOWN, PA.

Turner Constr. Co., 1717 Sansom St., Phila., Pa., CA **$900,000**. SCHOOL addn., MIDDLETOWN, DEL. St. Andrew's School, Middletown, Del. Bids Apr. 20. CD 4/6.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 17 South Carolina — May 18 Virginia
May 20 Kentucky — May 25 Louisiana
STREETS AND ROADS
May 17 South Carolina — May 18 Virginia
May 20 Kentucky

▲† **South Carolina**—BA 6/1—U.S. Eng., Customhouse, Charleston, removal of 3,000,000 cu. yd. material from new Charleston harbor channel, Charleston Co. $1,000,000. CD 5/2.

BIDS ASKED—BUILDINGS

W. Va., Wheeling—TELEPHONE—BA 5/17—Chesapeake & Potomac Telephone Co. of W. Va., 816 Lee St., Charleston, dial telephone. $500,000. Greife & Daley, Payne Bldg., Charleston, Zone 1, archts. CD 1/27.

SOON LETS CONTRACT—BUILDINGS

▲ **N. C., Hickory**—PLANT—General Electric Co., River Rd., Schenectady, N.Y., soon lets contract 400,000 sq. ft. distribution transformer plant. $20,000,000. Robert & Co. Assoc., 96 Poplar St. N.W., Atlanta, Ga., engrs. CD 1/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Wright Contg. Co.**, 504 25th Ave., Columbus, Ga., LB **$3,497,704**, runway, taxiway and apron, Seymour Johnson Air Force Base, ENG-31-075-55-51, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Apr. 26. CD 3/22.

† **Macon Constr. Co.**, Franklin, N.C., CA, **$906,225** relocating Georgia State Route 53, Buford Dam, Inv. CIVENG-01-076-55-65, GEORGIA, U.S. Eng., 2301 Grant St., Mobile, Ala. CD 3/25/54.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

La.—**W. H. Patterson & Co.**, P.O. Box 2229, Baton Rouge, La. LB **$530,853**. wid'n., c. conc. 13.385 mi. Boyce-Alexandria Hy., State Rte. 20, S.P. 53-02-10 and 53-01-08, F.A. Secondary Proj. S 334 (1), Rapides Parish;

La.—**The White Constr. Co.**, Box 1695, Baton Rouge, La. LB **$515,292**. wid'n; c. conc. 12.583 mi. Lawtell-Eunice Hy., State Rte. 7, S.P. 12-11-13, F.A. Proj. F 199 (6), St. Landry Parish;

La.—**W. R. Aldrich & Co.**, P.O. Box 1751, Baton Rouge, La. LB **$411,430**. bit. surf. tr., bridges 2.909 mi. Georgetown-Zenoria Hy., State Rte. 1108, S.P. 128-04-03 and 128-05-13, Grant and LaSalle Parishes;

La.—**Barber Brothers Co.**, Box 629, Baton Rouge, La. LB **$88,126**. bit. surf. tr. 4.875 mi. Hoo-Shoo-Too Rd., State Rte. 879, S.P. 817-26-05, East Baton Rouge Parish;

La.—**Campbell Constr. Co., Inc.**, Box 1758, Shreveport, La. LB **$164,960**. bit. surf. tr .6.72 mi. Holly Beach-Cameron Hy., State Rte. 104, S.P. 31-01-05, F.A. Secondary Proj. S 188 (5), Cameron Parish; LB **$366,447**. wid'n., bit. hot mix 9.232 mi. Bossier City-Taylortown Hy., State Rte. 10, S.P. 10-06-29, Bossier Parish;

La.—**Coastal Contractors, Inc.**, Box 911, Baton Rouge, La. LB **$293,650**. bit. surf. tr. 8.334 mi. Breaux Bridge-Arnaudville Hy., State Rte. 401 and 25, S.P. 404-02-05 and 56-05-04, St. Martin Parish; LB **$170,241**, bit. surf. tr. 6.497 mi. Waverly-Warsaw Hy., State Rte. 237, S.P. 164-02-07, Madison Parish;

La.—**Richard Coco**, Marksville, La. LB **$78,656**. bit. surf. tr. 4.88 mi. Cloutierville Loop-Odra Rd. Hy., State Rte. 2173 and 605, S.P. 53-30-09 and 362-01-06, Natchitoches Parish;

La.—**Ben F. Hawkins Contractor**, Box 486, Lake Village, Ark. LB **$131,896**. bit. surf. tr. 4.391 mi. Goodwill-Braswell School Hy., State Rte. 207, S.P. 334-02-07, F.A. Secondary Proj. S 520 (1), West Carroll Parish;

La.—**T. L. James & Co., Inc.**, Box 531, Ruston, La. LB **$437,000**. wid'n; c. conc. 14.109 mi. Sorrento-Garyville Hy., State Rte. 1500, S.P. 7-06-09, 7-05-09 and 7-04-11, F.A. Proj. F 172 (10), Ascension, St. James and St. John the Baptist Parishes; LB **$410,107**. wid'n., c. conc. 13.182 mi. GaryvilleBonnet Carre Hy., State Rte. 1500, S.P. 7-04-10 and 7-03-19, F.A. Proj. F 172 (11) and F 173 (15), St. John the Baptist and St. Charles Parishes; LB **$494,186**. wid'n; c. conc. 9.629 mi. New Iberia-Baldwin Hy., State Rte. 2, S.P. 4-05-13 and 4-06-07, F.A. Proj. F. 28 (3), Iberia and St. Mary Parishes;

La.—**LeBlanc Brothers**, 702 Louisiana National Bank Bldg., Baton Rouge, La. LB **$419,898**. bit. wearing course 8.118 mi. Boutte-Des Allemands Hy., State Rte. 2, S.P. 5-08-16, F.A. Proj. F 216 (11), St. Charles Parish;

La.—**H. G. Madden**, Box 1048, Minden, La. LB **$118,613**. bit. surf. tr. 8.52 mi. Jamestown-Heflin Hy., State Rte. 66, S.P. 293-02-04 and 293-03-06, F.A. Secondary Proj. S 508 (1), Bienville and Webster Parishes;

La.—**McCormick & Spaulding**, 2526 Ave. B Hillcrest, Alexandria, La. LB **$97,197**. bit. surf. tr. 7.139 mi. Campti-Clear Lake Hy., State Rte. 606, S.P. 835-09-03, Natchitoches Parish;

La.—**G. E. Steed, Contr.**, Box 535, Springhill, La. LB **$157,213**. bit. surf. tr. 4.635 mi. Sarepta-Shongaloo Hy., State Rte. 70, S.P. 83-06-11, F.A. Secondary Proj. S 111 (2), Webster Parish; LB **$279,668**, grading 7.245 mi. Georgetown-Olla Hy., State Rte. 14, S.P. 15-04-10 and 15-05-11, F.A. Proj. F 111 (12) and F 56 (8), Grant and LaSalle Parishes. Bids Apr. 27. CD 4/11 and 4/13.

† **Great Lakes Dredge & Dock Co.**, 122 S. Michigan Ave., Chicago, Ill. CA **$889,000**, est. $1,300,000. dredging channel of Green River, KENTUCKY. U. S. Engr., P.O. Box 59, Louisville 1, Ky. Bids Apr. 28, awarded May 2. CD 5/3, under LB.

▲ **Ruby Constr. Co., Inc.**, 3835 Madison Dr., Louisville, Ky. LB **$1,047,355**. Contr. 4, 2,200 cu. yd. earth excav., 3,900 cu. yd. rein.-con.; LB **$259,654**. Contr. 8-B, 20,000 ft. 8- to 26-in. pipe for supplementary 20- and 24-in. water transmission distribution main, HENDERSON, KY. City, City Hall, Henderson, Ky. Bids Apr. 29. CD 3/23;
Roy Ryan Constr. Co., 1400 Groves St., Evansville, Ind. LB **$415,862**. Contr. 7-A, 5,500 cu. yd. excav., 5,500 ft. 12- to 48-in. concrete pipe; LB **$112,927**, Contr. 7-C, 20,000 ft. 8- to 20-in. pipe (Henderson, Ky.);
Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill. LB **$121,190**. Contr. 8-A, 1m.g. elevated water tank (Henderson, Ky.).

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **United Engineering & Constructors, Inc.**, 1401 Arch St., Phila., Pa. CA **$15,000,000**. steel PLANT expansion, ASHLAND, KY. Armco Steel Corp., 730 Curtis St., Middletown, O. CD 3/17.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 24 Indiana, Wisconsin
STREETS AND ROADS
May 16 Michigan — May 24 Indiana, Wisc.
June 7 Ohio

BIDS ASKED—BUILDINGS

▲ Ind., Buffington—PLANT—BA 5/21—Universal Atlas Cement Co., 100 Park Ave., New York, N. Y., cement plant on premises. $3,000,000. H. K. Ferguson Co., 105 W. Adams St., Chicago, Ill., engr. CD 12/8/54.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, Mich. LB $2,891,400. Contr. NE-10, high lift structure for Northeast Station, 11000 East Eight Mile Rd., DETROIT, MICH. City, Bd. Water Comrs., Water Board Bldg., 735 Randolph St., Detroit 26, Mich. Bids Apr. 14. CD 3/15.

▲† Hoyle-Newberg Constr., Iron Mountain, Mich. CA $1,437,000. central heating plant, distr. sys., water supply sys. and sewage collection and treatment sys., K.I. Sawyer Air Force Base, Marquette Co., MARQUETTE, MICH. U.S. Eng., 600 E. Jefferson Ave., Detroit, Mich. CD 5/3, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Baytos Constr. Co., 5000 Market St., Youngstown, O. CA $2,500,000 400 ranch type HOUSES, Sunset Knolls, Schenley Ave., Canfield Rd. area, YOUNGSTOWN, O. Timely Homes, Inc., c/o contractor.

▲ Timberlane Homes, Inc., c/o Nils Johnson & Donald Cook, Mahoning Bank Bldg., Youngstown, O. Owner Builds. $1,250,000. 147 HOMES in Austintown Twp., half mi. west of city in Kirk Rd., YOUNGSTOWN, O.

Panozzo Constr. Co., 11912 S. Union Ave., Chicago, Ill., Own Forces, $960,000. 60 HOMES, CALUMET PARK, ILL. Floyd Evans, 8317 S. Prairie St., Chicago, Ill., archt.

▲ Hope Constr. Co., 3520 N. Knox St., Chicago, Ill., CA, $1,500,000. 7 unit SHOPPING CENTER, parking, sewer and water, CHICAGO HEIGHTS, ILL. C. L. Schrager & Co., 110 S. Dearborn St., Chicago 3, Ill. Jens J. Jensen, 110 S. Dearborn St., Chicago 3, Ill., archt. Awarded Apr. 26.

Davis Home Builders, 1517 W. Birchwood St., Chicago, Ill., Own Forces, $750,000, 50 HOMES, DEERFIELD, ILL.

John S. Clark, 211 S. Cicero St., Chicago, Ill., Own Forces, $850,000. 35 HOMES, NORTHBROOK, ILL. Louis N. Bailuff, 35 E. Wacker Dr., Chicago 1, Ill., archt.

Lerner-Linden Constr. Co., 21701 Republic St., Oak Park, Mich. CA $853,854, JUNIOR HIGH SCHOOL, Community Field, BERKLEY, MICH. City, E. G. Carlson, secy. Bd. Educ., 2325 Catalpa St., Berkley, Mich. CD 5/3, under LB.

Couchois & Miller, 2250 Seminole Dr., Okemos, Mich. Owner Builds. $900,000. Lakeview Heights Development, 70 ranch HOMES, Buckingham Rd., Bayshore Dr., HASLETT, MICH.

Grandview Development Co., 1404 Bernhard St., Hazel Park, Mich. Owner Builds. Est. $640,000. 75 HOUSES Harry and Hughes north of Eight Mile Rd., HAZEL PARK, MICH. B. L. Weber, 1404 Bernhard St., Hazel Park, Mich., archt.

▲ Versatile Real Estate Co., 29319 Harper St., Roseville, Mich. Owner Builds $2,000,000. 190 brick ranch HOUSES, Little Mack and 12 Mile Rd. section, ROSEVILLE, MICH.

Sullivan-Smith, Inc., 22963 W. Outer Dr., Dearborn, Mich. Owner Builds. $700,000. 60 brick HOUSES, Telegraph and Ecorse Rds., TAYLOR, MICH.

▲ Bert L. Smokler & Co., 1200 Penobscot Bldg., Detroit, Mich. Owner Builds. $1,800,000. Bretton Park Subdivision No. 2 150 brick HOUSES, TRENTON, MICH.

Al Fisher, 19322 James Couzens St., Detroit 35, Mich. Owner Builds. $825,000. 70 brick, frame ranch HOMES, Willow Run Expressway at Airport, WILLOW RUN, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 19 Kansas

BIDS ASKED—BUILDINGS

▲ Ark., West Memphis—STEAM PLANT—BA 5/18—Ebasco Services, Inc., 2 Rector St., New York, Zone 6, N. Y., Dixon-Yates Steam Atomic Energy Power Plant near here for Mississippi Valley Generating Co. (sub. Middle South Utilities Co.) 2 Rector St., New York 6, N. Y. $107,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NORTH DAKOTA—State Hy. Dpt., Bismarck, Schultz & Lindsay Constr. Co., 621 1st Ave. N., Fargo, N. D., LB $651,869, base, b. conc. surf. 12.092 mi. Proj. IN-12 (13) and IN-47 (2), Barnes Co.; LB $1,026,765, base, b. conc. surf. 13.13 mi. Proj. F-393 (18) and U-393 (10), Williams Co. Bids Apr. 29. CD 4/13.

▲† Foley Bros., Inc., New York Bldg., St. Paul, Minn., Winston Bros. Co., Northwestern Bank Bldg., Minneapolis, Minn., Donovan Constr. Co., 1725 Carroll Ave., St. Paul, Minn., C. F. Lytle Co., 250 Insurance Exchange Bldg., Sioux City, Iowa, and Missouri Valley Constr. Co., Box 801, Leavenworth, Kan., LB $5,823,292, outlet works, Stage III, downstream tunnels, Oahe Reservoir Proj., near Pierre, Inv. 25-066-55-89, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids May 3. CD 3/7.

† Frank Newell & Son Co., Box 943, Muskogee, Okla., LB $689,800, est. $100,000-$300,000. storage facilities for Ordnance Storage Area, Altus Air Force Base, ENG-34-066-55-91, ALTUS, OKLA. U. S. Eng. Box 61, Tulsa 2, Okla. Bids Apr. 27. CD 4/20.

† Leslie Miller, Inc., Box 3338, Fort Worth, Tex., CA $690,512, aircraft refueling sys., Abilene Air Force Base, ENG-41-443-55-119, ABILENE, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Apr. 28. CD 5/4, under LB.

E. E. Contg. Co., 902 State St., Houston, Tex., LB $570,265, est. $580,000, Elevated Roadway-Structure No. 3, Crawford-Elysian St. (from Buffalo Bayou south to beyond Ruiz St.), HOUSTON, TEX. City, City Hall, and Harris Co., Court House, Houston, Tex. Bids Apr. 27.

† Farnsworth & Chambers Co., Inc., Box 74, Houston 1, Tex., CA $969,756, Prop II, bachelor officers quarters, BOQ 200-nurses, Brooke Army Medical Center, ENG-41-243-55-53, SAN ANTONIO, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Apr. 22. CD 5/5, under LB.

▲† Campbell & Kay, Box 836, Tyler, Tex., CA $2,006,834. technical and industrial facilities, Holloman Air Force Base, ENG-29-005-55-79, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 29. CD 4/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Walter F. Hollmich, 9271 Manchester Rd., Brentwood 17, Mo. Owner Builds. $800,000. 160 RESIDENCES, 40 acre tract south side Mullanphy Rd. west of Patterson Rd., FLORISSANT, MO.

Edgar Stephens Constr. Co., Cairo, Ill. LB. $691,700. brick, steel, concrete high SCHOOL, POPLAR BLUFF, MO. Poplar Bluff School Dist. 37, Geo. R. Longhead, supt. Schools, Poplar Bluff, Mo. Bids Apr. 19. CD 3/30.

▲ Meinecke-Johnson Co., 5 N. 14 St., Fargo, N. D., CA $1,500,000. 6 story OFFICE BLDG., FARGO, N.D. Gate City Building & Loan Assn., 73 Broadway, Fargo N.D. CD 4/15.

▲ Olson Constr. Co., 410 S. 7th St., Lincoln, Neb., CA $1,312,898, general constr. Pershing Memorial City, AUDITORIUM, LINCOLN, NEB. City, City Hall, Lincoln, Neb. Bids Apr. 28. CD 5/5, under LB. Natkin & Co., 1400 Furnas St., Lincoln, Neb. CA $543,300, plumbing, heating, vent., (Lincoln, Neb.)

Borchman & Sons, 4401 Douglas St., Omaha, Neb., CA $899,512, general constr. NURSES HOME, at University of Nebraska Medical College and Hospital, OMAHA, NEB. University of Nebraska, 12 and R Sts. Lincoln, Neb. Bids Mar. 29. CD 4/1, under LB.

▲† Robert E. McKee General Contractor, Inc., Box 562, El Paso, Tex., CA $1,001,800, constr. 60-room, bachelor OFFICERS QUARTERS Fort Bliss, ENG-29-005-55-74, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 27. CD 4/20.

▲ Procon, Inc., 1111 Mt. Prospect St., Des Plaines, Ill., CA $1,985,000, hydrosulphurization PLANT unit; CA $326,125, BOILER PLANT expansion and imprvs.; CA $2,015,000, CATALYTIC PLATFORMING UNIT; CA $245,000, four storage tanks, HOUSTON, TEX. Grand total $4,571,125. Shell Oil Co., Shell Bldg., Houston, Tex. CD 5/2.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 1, 2 California

▲ Calif., Long Beach—SCHOOL—BA 5/20—Long Beach Bd. Educ., 715 Locust Ave., Cecil B. De Mille Junior High School. $1,425,000. Van Alstine & McLean, 3916 Myrtle Ave., archts. CD 3/24.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

UTAH—State Road Comn., Salt Lake City,
Thayn Constr. Co., 2021 E. 2700 South St., Salt Lake City, Utah, CA $740,986, est. $832,866, plant mix bit. surf. and two 20 ft.concrete structures 10.437 mi. Salt Lake Co. Bids Apr. 5. C 4/15, under LB.

▲ CALIFORNIA—State Div. Hys., 1120 S. Spring St., Los Angeles,
J. A. Thompson & Son, 8330 Hindry Ave., Los Angeles, Calif., CA $1,103,171. paving, grading between 22 St. in Banning and 0.7 mi. east of Banning 3.5 mi. in U. S. 60, 70 and 99 and concrete overcrossing bridge, Riverside Co. Bids Apr. 14, awarded Apr. 29. CD 4/4.

▲† Morrison-Knudsen & R. A. Westbrook, 411 W. 5 St., Los Angeles, Calif., CA, $4,746,411, est. $5,000,000, Runway 13-31 extension, ENG-04-353-55-131, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 26, awarded Apr. 28. CD 5/2, under LB.

▲† George A. Fuller Co., 3100 W. 8 St., Los Angeles, Calif., LB, $1,850,945, research laboratory facilities, Edwards Air Force Base, ENG-04-353-55-97, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 22. CD 3/28.

▲† Lindgren-Swinerton, 1631 Beverly Blvd., Los Angeles, Calif., CA, $1,605,374 shops, Norton Air Force Base, ENG-04-383-55-127, SAN BERNARDINO, CALIF. U. S. Eng., 751 Figueroa St., Los Angeles, Calif. Bids Apr. 27. CD 5/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Allan Associates, 618 S. Orange St., Los Angeles, Calif., CA, $1,242,754, imprv. 110 BARRACKS and two BOQ BLDGS., AVI-55-88, FORT ORD, CALIF. Office of Purch. Branch, Fort Ord, Calif.

Workman Constr. Co., 4263 N. Cedar St., Fresno, Calif., Owner Builds, $712,000. 89 HOME subdivision, FRESNO, CALIF.

Vesy & Moore Constr. Co., 170 E. California St., Pasadena, Calif. Owner Builds. $950,000. 89 frame, stucco DWELLINGS, Lingard, Lancaster and Gingham Sts., LANCASTER, CALIF. CD 9/23.

▲† Robert E. McKee General Contractor Inc., 4701 San Fernando Rd. West, Los Angeles, Calif., LB $2,323,000. CLINICAL and SURGICAL BLDG. Wadsworth Hospital, LOS ANGELES, CALIF. Veterans Admin., Munitions Bldg., Wash. D. C. Bids May 3. CD 4/13.

▲ L. E. Dixon Co., 409 S. California St., San Gabirel, Calif., Owner Builds, $1,163,400, 122 frame, stucco DWELLINGS, Lidford, Pocono and Prior Sts., PUENTE, CALIF.

Bollinger & Kelton, 945 N. La Cienega St., Los Angeles, Calif., CA, $854,900, 83 frame, stucco DWELLINGS, Armington and Charimont Aves., PUENTE, CALIF. Gain Corp., 945 N. La Cienega St., Los Angeles, Calif. Palmer & Krisel, 11757 San Vicente Blvd., Los Angeles, Calif., archts.

▲ Sterling Homes, 1218 Broadway, Redwood City, Calif., Owner Builds, $1,691,500, 199 HOME subdivision, SAN BRUNO, CALIF.

▲ Larwin Co., 242 S. Beverly Dr., Beverly Hills, Calif., Owner Builds, $1,019,600, 96 frame, stucco DWELLINGS, Westman Ave. and Lochlin St., WHITTIER, CALIF. Palmer & Krisel, 11757 San Vicente Blvd., Los Angeles, Calif., archts.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 17 Saskatchewan June 8 Ontario

BIDS ASKED—BUILDINGS

Alta., Calgary—SALES and SERVICE—BA 5/16—International Harvester Co. of Canada Ltd., 200 Hillyard Ave., Hamilton Ont., 1 story, 162x220 ft., steel, brick, concrete block truck sales and service bldg. $750,000. Kyles & Kyles, 247 John St. S., Hamilton, Ont., archts. CD 2/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Canadian General Electric Co. Ltd., 212 King St. W., Toronto, Ont., CA, $1,070,000. two generators for Beechwood power development on St. John River near Perth, NEW BRUNSWICK. New Brunswick Electric Power Comn., 527 King St. Fredericton, N. B. Awarded Apr. 28. CD 3/16.

▲ ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,
Ont.—Pecock & McQuigge Ltd., 1109 Millwood Rd., Toronto, Ont., LB, $680,278, grading, culverts 6.6 mi. Hy. 401, Mora River at Belleville; LB $358,645 grading, culverts, gran. base 7 mi. south of Lindsay on Hy. 35;
Ont.—H. J. McFarland Constr. Co., Box 559, Picton, Ont., LB $279,275, controlled access road 1.7 mi. Hy. 401 from Hy. 38, near Kingston;
Ont.—Dinsmore Constr. Co. Ltd., Box 246, Windsor, Ont., LB, $167,035, grading, culverts, granular base 7.7 mi. Hy. 46 Eldon Station to Kirkfield;
Ont.—Huron Constr. Co. Ltd., Richmond St., Chatham, Ont. LB, $1,209,061, granular base and c. conc. 6.35 mi. Hy. 401 dual express road from Rochester townline to Belle River Rd., Chatham;
Ont.—Wallace A. Mackey Ltd., 50 Church St., Weston, Ont., LB, $259,625, grading, culverts, gran. base 5.2 mi. Hy. 11 from Big East River to Novar;
Ont.—Joe Kerr, Box 141, Wingham, Ont., LB $151,682, grading, culverts and gran. base 615 mi. Hy. 21 near Port Elgin;
Ont.—Peel Constr. Co. Ltd., 74 Main St. W., Brampton, Ont., LB, $235,390, grading, culverts, gran. base 4.5 mi. Hy. 6, south of Tobermory, Bids Apr. 27, CD 3/17;
Ont.—Cox Constr. Co. Ltd., Box 105, Hillsburgh, Ont., LB $389,890. grading, gran. base, culverts, hot mix paving 5 mi. Hy. 5, Peter's Corner near Hamilton. Bids Apr. 4. CD 3/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ E. G. M. Cape & Co., 620 Cathcart St., Montreal, Que., CA, $1,000,000, WAREHOUSE for grocery chain, Bedford Rd. and Darlington Ave., MONTREAL, QUE. Thrift Stores Ltd., 960 Outremont Ave., Montreal, Que. Luke & Little, 1515 Crescent St., Montreal, Que., archts. Alex G. Moore, 940 Ogilvy Ave., Montreal, Que., engr. Awarded Apr. 30.

▲ Larose Constr. Inc., c/o David Reich, archt., 1818 Sherbrooke St. W., Montreal, Que., Owner Builds, $1,125,000. 51 split level bungalows in HOUSING project near Cote Vertu Rd., St. Laurent Suburban Area, MONTREAL, QUE.

(Proposal Advertisements see pp. 172 to 176)

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Brownhoist Cranes are helping maintain high production schedules in mines, steel mills, factories, and scrap yards . . . in fact, wherever there are railroads throughout the world. Brownhoist Diesel-Electric Locomotive-Cranes, for all their husky size, handle easily. Their patented Monitor Type Cab and Clear-Vision Boom give a 360° view. Operating controls are within easy reach. Electric travel permits operation as a switch engine as well as a crane. Constructed to last for many years with little maintenance. Brownhoist Diesel-Electric Cranes are available in capacities from 25 to 100 tons. For complete information, consult your nearest Brownhoist representative or write us today.

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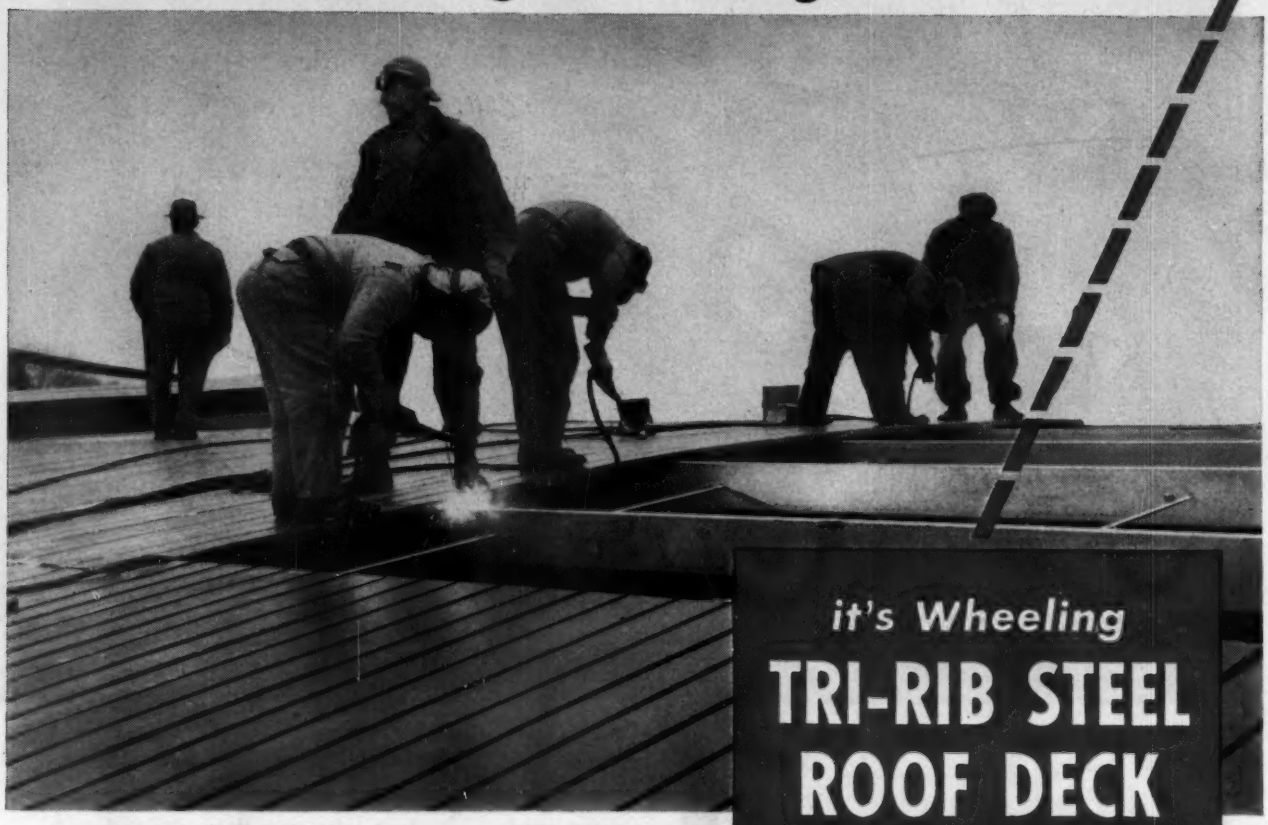
High strength / weight ratio of roof deck cuts gross weight 40%



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Wheeling Tri-Rib Steel Roof Deck reduces dead load up to 22 lbs. per sq. ft. As a result you can use fewer columns, shallower footings, no subpurlins . . . often cut supporting steel requirements by as much as 20%. Write for full details or see our catalog in Sweet's.

Highway Construction—use Wheeling Galvanized Corrugated Culverts. Copper steel or pure iron. Manufactured to comply with Federal and all state highway specifications. Write for details.

DESCRIPTION

METAL THICKNESS: *18, 20, or 22-Gauge Cop-R-Loy Steel sheets.*
FINISH: *Zinc chromate iron oxide primer coat baked on after fabrication.*
LENGTHS: *up to and including 22 feet, 6 inches.*
WIDTH: *18 inches.*
PANEL WEIGHT: *50 to 67 lbs., depending upon size of panel.*
RIB DEPTHS: *1½", 1¾", 2", 2½", spaced 6" on centers.*
DEAD WEIGHT: *8 to 10 lbs. per sq. ft. when insulated and with built-up roofing.*

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LOUISVILLE MINNEAPOLIS NEW ORLEANS NEW YORK PHILADELPHIA RICHMOND ST. LOUIS

Designed in accordance with specifications adopted by A. I. S. I. for light gauge structures, dated January, 1949.

Indiana Toll Road Bid Covers Railroad Relocation

A $5.486-million contract for one mile of Indiana East-West toll road features railroad work as well as the highway its entire length. This mile carries embankment and bridges for relocation of Chicago South Shore and South Bend R. R. and is in Hammond, Lake County, Ind. It brings to 139.5 mi, or 89%, the total of the 156-mi project contracted.

J. E. Greiner Co. is consulting engineer. Contracting design engineers are Richardson, Morehouse, Ramsey & Fisher; Harry A. Balke; and Moran-Proctor-Mueser-Rutledge. Work is for the Indiana Toll Road Commission, Dillon Geiger, chairman, A. J. Wedeking, executive director, and H. D. Hartman, Chief Engineer.

Contract for this section went to W. E. O'Neill Construction Co., low of eight bidders and 7.8% below second. Leading factor in O'Neill's bid was his total for structural concrete, 15.3% below second. Structures, mostly railroad, account for $3.661-million or 66.7% of the total.

This contract includes reinforced concrete pavement and grading, drainage, and toll and railroad structures.

1C W. E. O'Neil Const. Co., Chicago, Ill. $5,486,858
2 Kenny Const. Co., Skokie, Ill. 5,952,417
8 R. B. Potashnick, Cape Girardeau, Mo. 6,909,314

Completion: 11-15-56; liq damages $2,100 per day

Bids: 4-6-55 Items	Unit	Quantity	Unit Prices 1 C	 2
Grading			$1,061,414	$1,168,926
Clearing and grubbing	ls	.....	$5,000	$12,000
Excavation, common	cy	5,900	0.60	0.70
Special compaction	cy	142,600	0.06	0.04
Excavation, peat	cy	1,000	1.20	0.70
Pavement removal	sy	10,680	2.00	0.80
Pipe removal	lf	4,310	2.00	1.50
Borrow	cy	837,000	1.18	1.32
Water	gal	1,300	2.00	3.00
Topsoil stripping	cy	5,110	0.50	0.50
Topsoil 4", f & spread	sy	38,250	0.30	0.25
4", spread from S-pile	sy	37,900	0.10	0.10
Seeding type A	sy	9,750	0.04	0.03
B	sy	67,800	0.03	0.04
C	sy	14,350	0.04	0.03
Lime	t	40	6.00	10.00
Fertilizer	t	8	100.00	150.00
Mulch	t	17	60.00	100.00
Drainage			$293,820	$365,340
Excavation ditch	cy	1,000	0.80	5.00
Concrete cl D, headwalls	cy	12	125.00	80.00
Reinf steel, hdwls	lb	600	0.15	0.15
Excavation, sp, culv P	cy	105	20.00	5.00
Aggregate, subsurf drain	cy	50	7.00	5.00
Subsurface drains 6"	lf	500	2.00	1.50
RCP ASTM (C) stm S 12"	lf	710	9.00	8.00
15"	lf	2,900	9.00	9.00
18"	lf	890	15.00	10.00
24"	lf	150	11.00	14.00
36"	lf	180	14.00	20.00
42"	lf	1,160	18.00	30.00
48"	lf	920	25.00	45.00
54"	lf	40	34.00	50.00
RCP ASTM (S) stm S15"	lf	550	6.00	8.00
18"	lf	600	12.00	9.00
24"	lf	770	18.00	14.00
30"	lf	780	11.00	17.00
36"	lf	770	17.00	20.00
42"	lf	880	16.00	25.00
48"	lf	120	47.00	50.00
54"	lf	410	27.00	50.00
CIP storm sew 8"	lf	310	6.00	10.00
ex heavy	lf	110	7.00	10.00
10"	lf	180	8.00	15.00
ex heavy 10"	lf	110	10.00	10.00
15"	lf	550	23.00	20.00
18"	lf	500	29.00	20.00
30"	lf	220	50.00	75.00
48"	lf	220	100.00	100.00
BCCMP 12 ga stm S 10"	lf	450	5.00	10.00
15"	lf	500	7.00	10.00
18"	lf	260	9.00	20.00
VCP or BCCMP 12 ga storm sewer, 6"	lf	400	3.00	6.00
8"	lf	440	3.50	6.00
10"	lf	1,130	4.00	8.00
15"	lf	140	6.50	12.00
18"	lf	180	7.00	12.00
VCP storm sewer 6"	lf	500	3.00	6.00
8"	lf	500	3.50	6.00
Manhole type 1	ea	33	300.00	300.00
2	ea	3	400.00	600.00
Inlet type A-1	ea	20	165.00	130.00
C	ea	3	225.00	250.00
D	ea	6	325.00	300.00
Manhole, special	ea	8	350.00	800.00
CB Hammond std	ea	36	250.00	150.00
Castings adj to grade	ea	5	115.00	15.00

Bids: 4-6-55 Items	Unit	Quantity	Unit Prices 1 C	 2
Pavement			$273,653	$269,552
Reinf cmt conc base 9"	sy	3,450	6.00	6.00
Compacted aggr base	cy	2,740	5.00	4.00
Calcium chloride	t	30	60.00	80.00
Reinf portld CC pvmt 10"	sy	21,750	5.50	6.00
Gravel surface course	cy	740	5.00	5.00
Hot asph conc surf crse	t	1,680	12.00	11.00
Bit matl, prime or tack	gal	4,600	0.20	0.25
Penetr mac shoulders 3"	sy	14,350	1.00	1.00
Reinforcing steel	lb	20,700	0.14	0.11
Concrete curb type 1	lf	550	3.00	3.50
4	lf	1,470	6.00	4.00
variable width 4	lf	270	6.00	5.00
Concrete sidewalk	sy	3,480	5.00	4.50
Stabilizing course	cy	6,200	3.50	3.00
Conc sidewalk, median	sy	60	6.00	7.00
Curb & gutter type 2 std	lf	9,500	2.30	2.00
Structures			$3,661,611	$3,984,603
Excavation, dry	cy	14,640	4.00	5.00
wet	cy	9,750	9.00	20.00
Special fill, structs	cy	1,230	5.00	2.00
Asph conc wearg surf 2"	sy	11,650	1.00	1.00
Conc abv footings, cl F	cy	3,500	50.00	60.00
in footings, cl D	cy	6,110	50.00	50.00
abv footings, cl D	cy	4,480	50.00	70.00
superstruct, cl F	cy	3,350	50.00	60.00
Str stl gird span, carb	lb	5,057,900	0.16	0.15
beam span, carb	lb	5,202,900	0.16	0.15
Shear connectr, shapes	lb	91,610	0.22	0.25
spirals	lb	30,170	0.50	0.50
Str stl grd spn, silicn	lb	1,363,800	0.16	0.17
Structural timber	Mfbm	24	350.00	300.00
Scuppers type A	ea	50	90.00	150.00
Str stl bracing, removbl	lb	244,000	0.13	0.20
WI drainpipe 8" ϕ	lf	1,330	9.00	15.00
9" ϕ	lf	30	10.00	18.00
Str stl bracing left in	lb	137,900	0.15	0.23
Reinforcing steel	lb	2,686,700	0.10	0.14
Piles 12" BP 74, furnish	lf	4,510	4.00	4.00
drive	lf	4,440	1.80	1.50
12" BP 53, furnish	lf	27,530	2.80	2.80
drive	lf	26,360	1.50	1.50
Soil load bearing tests	ea	2	2,000	2,500
Steel pile load tests	ea	3	2,000	2,800
Steel H-pile splices	ea	100	100.00	40.00
Pipe handrail 3" ϕ	lf	2,500	3.00	8.00
Metal handrail type B	lf	6,530	3.50	8.00
Aggr for subsurface drns	cy	580	6.00	4.00
Subsurf drn VCP 6" perf	lf	280	3.00	2.00
ES VCP 8" perf	lf	110	3.50	2.50
Struct guard rl type A	lf	6,530	3.00	3.00
Railrd deck waterproofg	sy	4,260	4.00	3.50
Manhole frame & cover	ea	10	50.00	40.00
Stl sht pilg removable	af	33,650	3.00	2.00
Cr aggregate slope prot	t	1,850	5.00	5.00
Stl sht pilg left in	af	12,010	3.50	2.50
Appurtenances			$196,360	$163,997
Central field office	ea	1	50,000	35,000
Section field office	ea	1	4,000	2,000
Maint highway traffic	ls	.....	40,000	12,000
Rdway guard rail type A	lf	6,900	3.00	3.00
B	lf	3,110	3.50	3.20
ROW fence type 1	lf	9,150	1.00	1.30
markers	ea	56	5.00	10.00
Monuments, permanent	ea	10	20.00	18.00
Delineators	ea	50	5.00	6.00
Const contract info sgns	ea	4	75.00	90.00
Barricade, permanent	lf	470	15.00	8.00
Temp fence, 47" wov wire	lf	1,500	0.50	0.60
Settlement plates	ea	10	100.00	100.00
Fence & gate alteration	ls	.....	500.00	400.00
Rem & dispose of bldgs	ls	.....	100.00	25,000
Temporary track detour	ls	.....	51,200	40,000

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WET JOB
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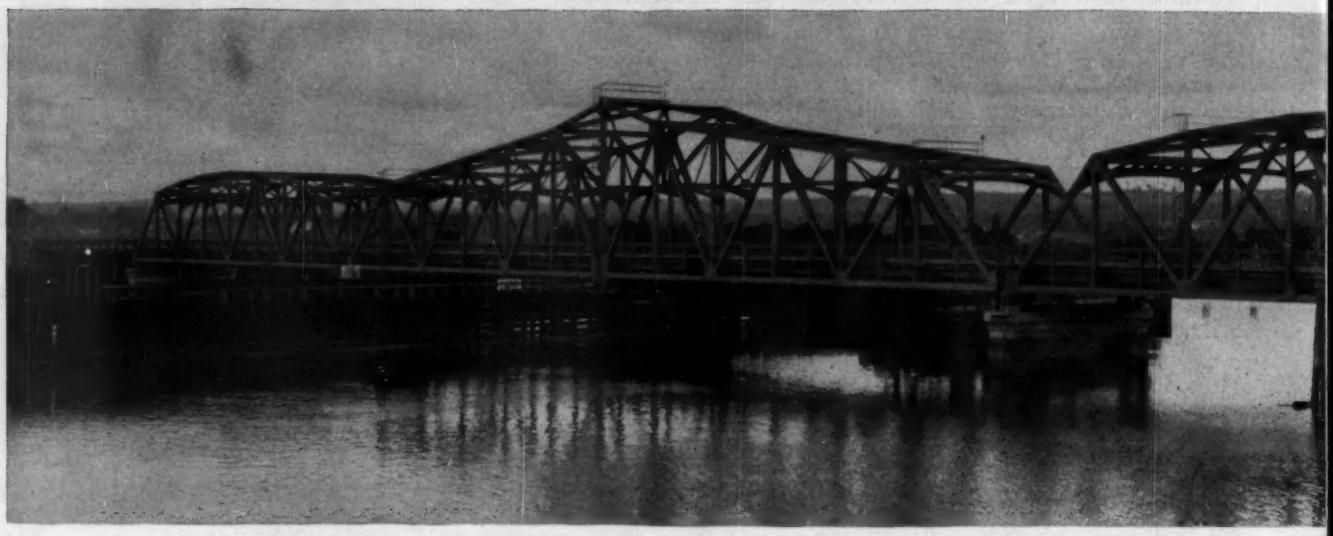
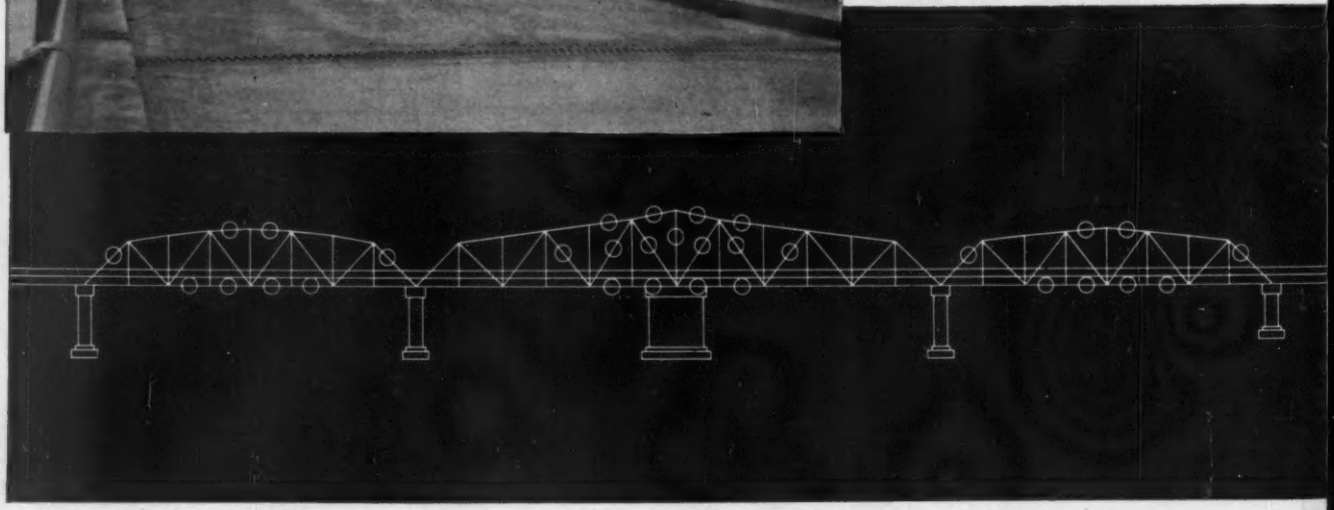
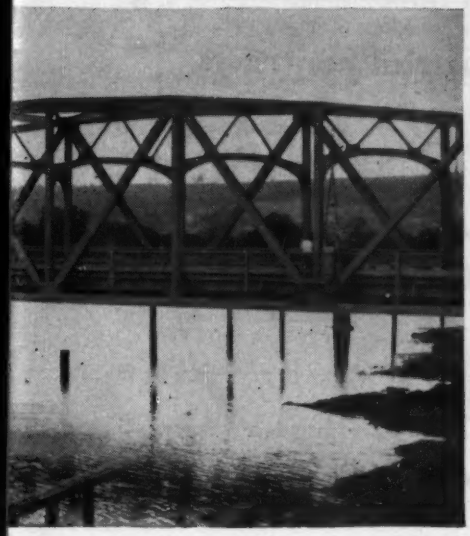
They wanted 4 things when they built



THIS SWING SPAN BRIDGE on Washington State Highway No. 1 crossing Steamboat Slough near Everett, Wash., consists of a 288 ft. swing span and two 182 ft. approach spans. 213 tons of USS MAN-TEN (A242) High Strength Steel, almost one-third of the steel in the bridge, are used in the truss members as indicated by circles in the diagram below, and in the floor beams. Owner: State of Washington. Contractor: M. P. Butler Company, Seattle, Wash. Fabricator: Gunderson Brothers Engineering Corporation, Portland, Ore.



this bridge over Steamboat Slough



...THEY WANTED PLENTY OF STRENGTH to take care of today's heavier truck loads and faster traffic

...THEY WANTED TO KEEP WEIGHT DOWN especially on the swing span

...THEY WANTED DURABILITY so that maintenance and repairs would be kept low

...THEY WANTED TO SAVE AS MUCH MONEY AS POSSIBLE in construction costs

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USS MAN-TEN Steel

• The 213 tons of **USS MAN-TEN** (A242) Steel that went into the truss members and floor beams of this recently completed river crossing gave the engineers exactly what they were after.

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USS MAN-TEN (A242) Steel is available in plates, wide flange beams, standard structural shapes, in bars and bar shapes. It is intended primarily for use in members of riveted and bolted structures requiring high strength, good fatigue resistance and atmospheric corrosion resistance equal to that of copper steel.

A number of bridges, both large and small, have already been built, or are under construction, with this superior steel. Among them are the West Virginia State Highway bridge at Wheeling, W. Va., in which 2,500 tons of **USS MAN-TEN** (A242) were used; the Maumee River bridge near Toledo, Ohio, (1,913 tons); the Red River bridge at Shreveport, La., (2,000 tons); the Delaware River Turnpike bridge connecting the Pennsylvania and New Jersey Turnpikes, (11,070 tons) and others.

We will be glad to discuss the many advantages of **USS MAN-TEN** (A242) Steel construction and to show you how this steel and other USS High Strength Steels — **USS TRI-TEN "E"** Steel and **USS COR-TEN** Steel — can be used to build safer, more dependable and longer lasting structures, often at lower costs than hitherto.

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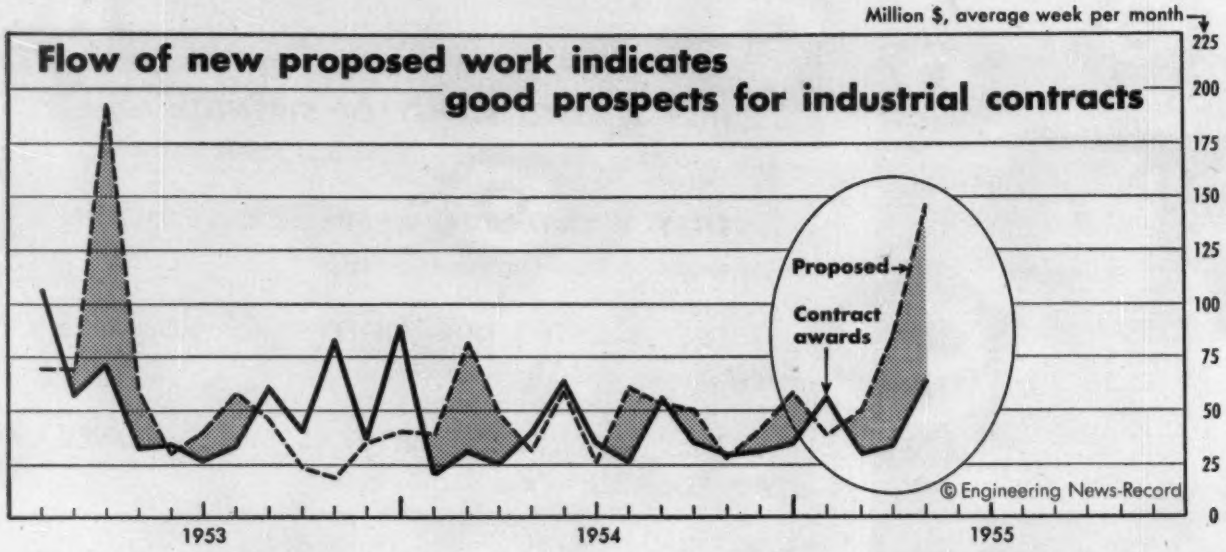


Industrial Awards Set a Fast Pace in 1955

So far this year, industrial construction has been setting a record pace for peacetime. Contracts awarded for new plants during the first 18 weeks of 1955 total $859 million, up 50% over the low volume a year ago and topped only by the 1951-1953 period, when the Korean campaign was going on. It looks as if this high level will continue in the months to come.

The reason for the optimistic outlook is that there has been an even sharper rise in the dollar volume of proposed industrial plants than there has been in contracts. During the first four months of this year, industrial projects going into the planning stage have a total estimated value of $1,361 million. That's 63% more than the value of plants proposed in the same period last year—and it's the third highest rate on record for this period.

The chart (above) shows how volume of proposed industrial work has been running higher than total industrial contracts since last June. This fast buildup in the backlog began to have its effect in increased contracts by January. Judging from past experience, this process may be expected to continue for some time.

Industrial Building Contracts by Industry

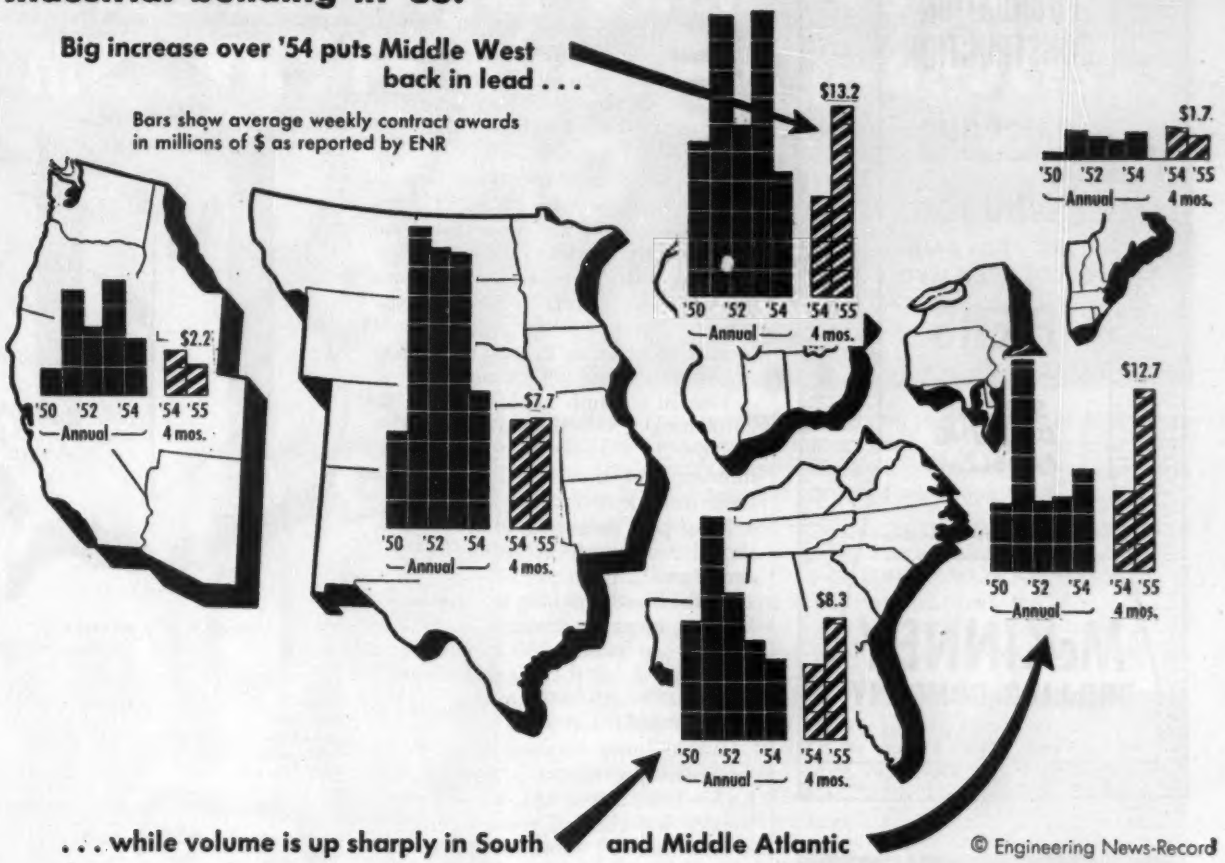
As Reported by Engineering News-Record

Industry	Dollar Value First Four Months 1954 (Millions)	1955	% Change '54-55	Number of Plants First Four Months 1954	1955	% Change '54-55
All Industry	$520.3	$778.3	+ 50	777	562	−28
These are running above 1954 $ volume . . .						
Process industries	$191.3	$356.9	+ 87	136	119	−12
Public utilities	52.4	136.0	+160	27	26	− 4
Auto factories	14.9	76.6	+414	11	9	−18
Metal refining & rolling	7.8	14.9	+ 91	6	7	+17
Textiles (excl. rayon)	6.4	7.3	+ 14	11	11	0
Radio, TV, electronics	1.2	1.6	+ 33	4	2	−50
General	46.1	61.8	+ 34	184	159	−14
These are running below 1954 . . .						
Machinery and parts	80.3	66.9	− 17	142	96	−32
Food industries	72.7	32.8	− 55	175	81	−54
Aircraft	24.9	10.1	− 59	15	10	−33
Service, automotive	10.6	9.5	− 10	37	21	−43
Wood industries	3.8	2.1	− 45	18	13	−28
Railroads	7.3	1.2	− 84	6	3	−50
These are staying even . . .						
Foundries	0.4	0.4	0	3	3	−33
Refrigeration and cold storage	0.2	0.2	0	2	3	+50

• **Sample projects**—New projects proposed this year are widely diversified. The biggest project so far is a $250-million steel mill at Camache, Iowa, by North American Steel Co. of Clinton, Iowa. Some preliminary work has been done but prospects for financing are still uncertain. Other major steel expansions were proposed by Armco Steel Corp.: $25 million for its plant at Butler, Pa., and $18 million for two open-hearth furnaces at Middletown, Ohio.

The biggest proposed power plant is the $107-million "Dixon-Yates" plant proposed by Mississippi Valley Generating Co. at West Memphis, Ark. Consolidated Edison Co. is planning a $60-million plant in New York City. Union Electric Co. of Missouri plans a $35-million unit at St. Louis, and Niagara Mohawk Power Corp.

Industrial building in '55:


Big increase over '54 puts Middle West back in lead . . .
Bars show average weekly contract awards in millions of $ as reported by ENR
$2.2
$7.7
$13.2
$8.3
$1.7
$12.7
'50 '52 '54 '54 '55
Annual
4 mos.
. . . while volume is up sharply in South and Middle Atlantic
© Engineering News-Record

plans a $30-million unit at Buffalo, N. Y. Con Ed also has a $30-40-million atomic plant proposed near Peekskill, N. Y.; and Yankee Atomic Electric Co. a $30-million plant in Massachusetts.

Aluminum is also in the picture with a $25-million mill at Terre Haute, Ind., for American Brass Co.; and a $24-million smelter at Rockdale, Texas, for the Aluminum Company of America.

The paper industry figures as a big construction customer, with plants like these going into the planning stage: a $30-million pulp and paper mill at Tyrone, Pa., for West Virginia Pulp & Paper Co.; a $20-million kraft paper and board plant at Tacoma, Wash., for St. Regis Paper Co.; and a $20-million paper mill for International Paper Co. at Mobile, Ala.

Other projects include: Ford Motor Co.'s $25-million chassis parts plant at Sterling, Mich.; Gulf Oil Co.'s $23-million expansion at Port Arthur, Texas, including refining, gas-treating and sulphur-producing facilities. Shell Chemical Corp. plans facilities at Norco, La., for producing hydrogen peroxide, acrolein, and glycerin products. General Electric Co. is planning a $20-million transformer plant at Hickory, N. C.

• **Industry analysis**—Analysis by industry of contracts awarded during the first four months (table, opposite page) shows the important category of process industries up 87% over the same 1954 period. Public utility contracts are running 160% ahead of last year's low volume. The next largest total is for auto plants, which with $77 million are more than five times volume for the same 1954 period. In contrast to increases in most other capital-goods industries, the machinery and parts industry is now trailing 17% behind 1954 volume.

The food industry, which set a record high for dollar volume of plants in 1954, has slipped sharply. At $33 million, contracts are less than half the total for first four months last year.

• **Regions**—As the chart and table show, industrial building contracts are sharply higher than last year in three

(*Continued on page 166*)

How Industrial Awards and Proposed Work Are Divided Among U. S. Regions

Region	Contract Awards: First Four Months 1954 (Millions)	Contract Awards: First Four Months 1955 (Millions)	Contract Awards: % Change '54–55	Backlog: April 30 1954 (Millions)	Backlog: April 30 1955 (Millions)	Backlog: % Change 12 Months 4/53–4/54	Backlog: % Change 12 Months 4/54–4/55
U. S. Total	$520	$778	+ 49.6	$10,836	$12,321	− 2.2	+13.7
New England	39	28	− 28.2	206	282	+15.7	+36.9
Middle Atlantic	93	217	+133.3	1,416	1,844	− 4.9	+30.2
South	88	140	+ 59.1	1,871	1,908	+ 8.6	+ 2.0
Middle West	117	225	+ 92.3	2,626	2,904	+ 6.1	+10.6
West of Mississippi	130	131	+ 0.8	3,919	4,443	− 4.9	+13.4
Far West	53	37	− 30.2	798	940	−27.2	+17.8

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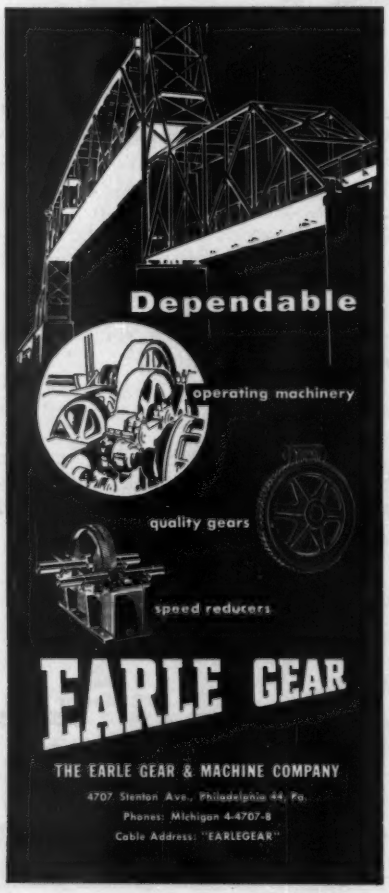


BUSINESS AND FINANCE

regions: Middle West, Middle Atlantic, and the South. The West-of-Mississippi is running about the same as in 1954. However, business is off 28% in the New England states, and the Far West is down 30%.

However, it is encouraging that in both of these regions where 1955 industrial contracts are running behind last year, the backlog is rising faster than in most of the other regions (table). The faster buildup of new proposed work in these regions could mean that new contracts in these areas might start rising before long.

The 30% climb in the Middle Atlantic backlog over the past 12 months, and the 11% climb in the Midwest, indicate that the high level of contracts in these two regions is more than a temporary surge. Contract volume should continue to be strong in these two regions.

In the South, backlog pressure is not building up as fast, though the backlog of proposed work is 2% higher than a year ago. So far, there is no indication that the South will return to the levels of 1951 and 1952.

While contract volume in the West-of-Mississippi region is only slightly higher than a year ago, the industrial backlog has climbed more than 13% in the past 12 months and is now over $4.4 billion—highest in the U. S. Of this total, Texas alone has $2.3 billion and Missouri has $0.9 billion. That puts these two states out in front of all the others in the U. S.

Other states with big industrial building backlogs are: Illinois, Indiana, and Ohio, each with about $750 million; Pennsylvania, $722 million; California, $540 million; New York, $524 million, and Arkansas, $414 million. Louisiana leads in the South with $328 million, while Massachusetts ($125 million) and Connecticut ($115 million) are tops in New England.

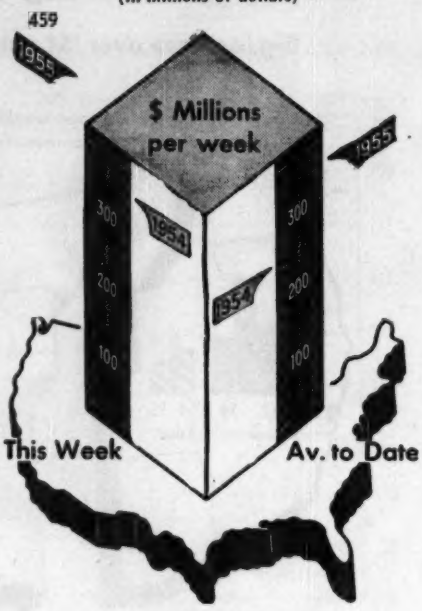
Business Briefs . . .

• **New round of steel expansion** is on the way. These are some of the companies that have announced plans in recent weeks: U.S. Steel Corp., National Steel Corp., Jones & Laughlin Steel Corp. Says Ben Fairless, retiring board chairman of U.S. Steel: "If our corporation is to hold its present position . . . we shall have to create the equivalent of one new Fairless Works about every two years—throughout the next two decades."

• **Standard Oil Co. of California** has picked Sand Island in Honolulu harbor as the site of a $30-million refinery.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 19 wks 1955	1954	% chge
Federal	$56.1	$642.7	$370.9	+73
State and municipal	116.2	1,835.9	1,601.3	+15
Total public	172.3	2,478.6	1,972.2	+26
Total private	286.5	4,185.6	2,751.8	+52
U. S. Total	$458.8	$6,664.2	$4,724.0	+41
Contracts by type of work				
Waterworks	$4.5	$93.3	$82.3	+13
Sewerage	8.2	145.6	136.6	+7
Bridges	5.5	169.1	137.6	+23
Highways	50.9	721.9	574.9	+26
Earthwork, Waterways	10.4	158.0	106.0	+49
Buildings:				
Public, excl. hsg.	42.7	620.7	580.3	+7
Housg., public	11.7	101.6	68.6	+48
Housg., private	198.6	2,453.3	1,529.9	+60
Commercial	44.8	606.9	442.5	+37
Industrial	37.0	895.5	670.0	+34
Unclassified	44.5	698.3	395.3	+77
Total	$458.8	$6,664.2	$4,724.0	+41

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)

	Week of May 5 1955	Cumulative 18 wks 1955	% chge '54-'55
Corporate securities	$179.9	$1,138.3	+5
State and municipal:			
All except housing	137.3	1,428.7	−17
Housing	...	46.2	+8
Federal loans	3.1	30.5	−31
Federal aid	...	...	...
Total non-federal	$320.3	$2,643.8	−8
Federal appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	$320.3	$2,643.8	−8

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction Cost	5/5	653.56	314.17	137.01
	4/28†	653.26	314.02	136.95
Building Cost	5/5	463.13	250.35	131.65
	4/28†	462.55	250.04	131.48
Volume	Apr.	609	248	176
	Mar.	691	281	200

† Official monthly index for May

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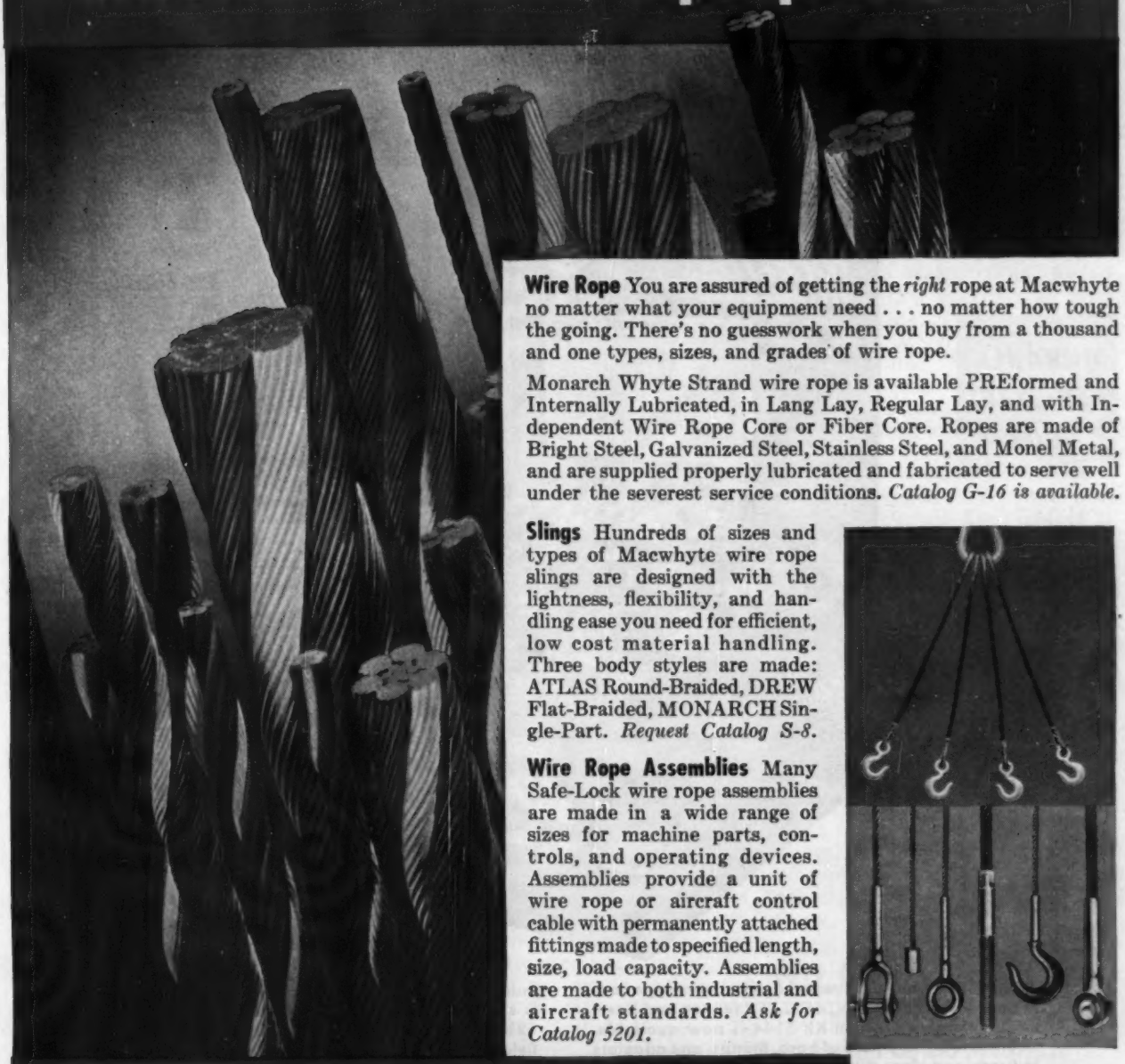

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REPRESENTING labor, contractors and architects on Buffalo's Joint Industry Committee are M. J. Crawford, G. W. Walker and G. M. Wolfe, three of the current chairmen who rotate in office every four weeks.

Labor, Management Seek Common Goal

Additional evidence that there's strength in unity for the construction industry comes from the ranks of labor, contractors and architects in the Buffalo, N. Y. area.

A few months ago the three groups hit upon a new device to promote their common interests. They've called it the Joint Industry Committee, dedicated to public service and receptive to the mutual benefits which must necessarily follow like the tail of a kite.

• **Goal**—The committee's ultimate goal is more and better construction for the Buffalo area. It seeks to promote the public welfare by plugging for new roads, schools, hospitals, housing and municipal developments and through these to provide more work for those who make up the construction industry.

Robert Logan, executive secretary of the Construction Industry Employers Assn., and one of the forces behind the committee, explained it this way: "Our whole purpose on this committee is to get the ball rolling, keep it rolling and be prepared to go into action when there's a job to be done. Each one of the organizations on this committee knows it has a big stake in the industrial growth of the Niagara frontier and by our joint efforts we are going to keep projects that mean work and dollars from fading away on the discussion table."

• **Origin**—Formation of the committee grew out of the once-a-week meetings of labor and contractors to iron out grievances in local labor relations. Consisting of sixteen members, representing the AFL Building Construction Trades Council of Buffalo & Vicinity, the Buffalo-Western New York chapter of the American Institute of Architects and the Construction Industry Employers Assn., the committee meets once a week in the CIEA executive offices. Chairmanship rotates among the three groups.

• **How it works**—When the JIC decides to support a project—or save one the city is in danger of losing—it goes to work, advising, planning, promoting and publicizing.

Mainly through the committee's quiet but forceful efforts, for example, the county of Erie has kept alive its hope of getting a $30-million state institution for retarded children. Only the committee's quick action, together with the support it got from the Buffalo Chamber of Commerce and several other civic agencies, kept the state from withdrawing the project from the Niagara frontier after some communities had objected to such an institution within their boundaries.

Another project shouldered by the committee is a study undertaken to develop a master plan for water and sewage facilities that will adequately serve the suburbs of Buffalo. The need has been kicked around for a long time and the situation, now critical, threatens to choke off a housing expansion program that has given jobs to thousands since the war.

A few have wondered how some of the proposed projects could stir up much interest on the part of most of the building trades. Why, for instance, should a bricklayer be interested in promoting a new highway? This is the answer from a building trades spokesman: "Because highways mean commerce, commerce means trade; trade means construction; construction means jobs for bricklayers."

So far the committee has been successful, and its efforts have had a friendly reception. With the combined strength and know-how of labor, contractors and architects, it's confident of its ability to play a vital part in engineering desirable projects from the planning stage to final completion.

And with its progress has come a natural development as important as the major goal—a "new look" for labor-management relations. Out of the common effort has grown an atmosphere of mutual respect and understanding—particularly noticeable in collective bargaining negotiations now under way. "When we sit down together," one committeeman remarked, "the old tendency to think we are fighting the world isn't there any more."

No Quick Answers

Negotiations in Cleveland point up old problems

Collective bargaining negotiations on behalf of the 40,000 AFL construction workers in the Cleveland, Ohio, area boiled down last week to the hard core of some old problems. Although a general wage increase of 10 to 15 cents an hour and two-year contracts seem likely, the result promises to be a compromise unsatisfactory to many.

At week's end, negotiations were in a stalemate. Only settlements were with the steamfitters and operating engineers—two-year contracts with a 7½-cent increase for each year. For the rest of the trades, except the bricklayers, the possibility of strikes grew

bigger. The council already has paved the way by filing a 30-day notice with the NLRB.

Major areas of disagreement between the Building Trades Employers Association, the Home Builders Association and the Building Trades Council are these:

• **Wages and contract duration**—Unions asked for a flat increase of 25 cents an hour across the board. A 12½-cent boost (7½ cents this year, 5 cents in 1956) was proposed by the BTEA, provided the unions would agree to a two-year contract. The building trades countered with a 12½-cent increase for a one-year contract and 20 cents (10 cents each year) for a two-year contract. Hoping to achieve some stability in price competition, contractors are reportedly more interested in getting a longer contract than in keeping the lid on wages.

• **Homebuilders**—The Home Builders Association, representing some 700 local contractors, isn't taking part in the BTEA negotiations, wants separate recognition (ENR, April 14, p.117), and is opposed to any pay boosts. Last year its reluctance to go along with the BTEA touched off an eight-day strike followed by capitulation without separate agreements.

It contends the carpenters—who are said to get more and steadier employment in the long run from homebuilders than from other contractors—agreed to deal directly with homebuilders this year. Last month the homebuilders tried to nail the issue down by petitioning the NLRB for recognition. Before the hearings were completed, an agreement was reached with the carpenters for separate negotiations. If they fail to come off, the homebuilders are planning to reopen the petition.

• **Trade autonomy**—One of the biggest issues stems from the use of prefabricated parts—a touchy point with the unions. Last year the carpenters got an anti-prefabrication clause in the BTEA contract. It's expected other crafts will seek similar clauses this year. The homebuilders are dead set against such a policy—prefabrication is their principal means of cutting building costs.

During the course of the negotiations, the bricklayers took the no-strike lead and signed a no-strike pledge with the BTEA. Although not a member of the Building Trades Council, the union has agreed to go along with whatever agreement the BTEA reaches.

Higher Pay, Longer Term Continue Contract Trend

Negotiations across the country continue the trend of higher wages and longer contracts. Here are some recent scores:

Omaha painters—They've agreed to a two-year contract with a 7½-cent increase now and an additional 5 cents an hour next October and again in April and October of next year. An extra 10-cent boost is added for swing stage work and 50 cents for extremely hazardous work. Previous basic rate was $2.32½.

Rhode Island teamsters—A two-year contract with the Rhode Island Road Builders Assn. grants a wage boost of 20 cents retroactive to April 1 with an automatic increase of 10 cents on May 1, 1956. It ended the threat of a strike by 1,000 AFL truck drivers on highway construction. Old minimum rate was $1.75.

California painters—A contract, still to be ratified, gives 8,500 painters in seven San Francisco Bay area counties a 22-cent increase. Old rate was $270 for a 35-hour week with time and a half for overtime and double time for Saturdays, Sundays and holidays. There was no increase last year.

Toledo building trades—Settlements with the AFL building trades unions are shaping up on a formula calling for a two-year contract with these wage boosts: 7½ cents now, 5 cents Nov. 1 and 7½ cents next May, raising the average pay rate above $3.20 by 1957.

Merger: The Shape of Things to Come

The AFL-CIO Joint Unity Committee last week completed its draft of the constitution for the new and still unnamed federation of labor. Scheduled for final approval early next December, the long and comprehensive document contains the first detailed account of what the merger means.

Of particiular interest to the construction industry are the provisions relating to craft unions, jurisdiction and organization. They add up to this: No immediate change in the appearance of organized labor as it's seen today. Designed to encompass without dislocation the diverse and scattered units of the AFL and CIO, the constitution assures that:

• Existing departments of the AFL, such as the Building Trades Department, will continue as self-managed and self-financed trade departments in the new federation.

• Craft unions are recognized as a necessary form of trade union organization—equally as appropriate as industrial unions.

• The autonomy, integrity and jurisdiction of each existing union will be protected and preserved. Raiding is banned. Elimination of conflicting jurisdictions through merger or agreement is recommended. The AFL-CIO no-raiding pact, CIO organizational disputes agreement and AFL internal disputes plan will remain in effect as to those unions presently participating.

A committee will be appointed to draft a new agreement incorporating each of these and to undertake extension of the new agreement on a voluntary basis to all affiliates of the new federation. Meanwhile, with the consent of those who've signed, the no-raiding pact will be extended for two years. Violations of the raiding ban, not reached by the no-raiding pact, are subject to a time-consuming procedure, starting with an attempt at voluntary settlement and ending eventually in the lap of the convention.

• Organization of the unorganized will be encouraged and promoted.

Listed among the "hopes and aspirations" of the working people, to the achievement of which the federation is dedicated, are a number of goals which afford some clue to future trends. These include:

• More effective organization of working men and women.

• Enjoyment of the rights to which workers "are justly entitled."

• Higher standards of living and working conditions.

• Attainment of security.

• Enjoyment of leisure which skills make possible.

• Promotion of the sale and use of union made goods and union services through use of the union label and other symbols.

Conscious of labor's maturity, the constitution declares that the new federation will "responsibly serve the interests of all the American people." Though potentially a vehicle of tremendous political power, it will preserve "the independence of the labor movement from political control."

The CIO and AFL are expected to give their final approval to the constitution and the Miami merger agreement (ENR Feb. 17, p. 242) at concurrent conventions to be scheduled for December 1 in New York.

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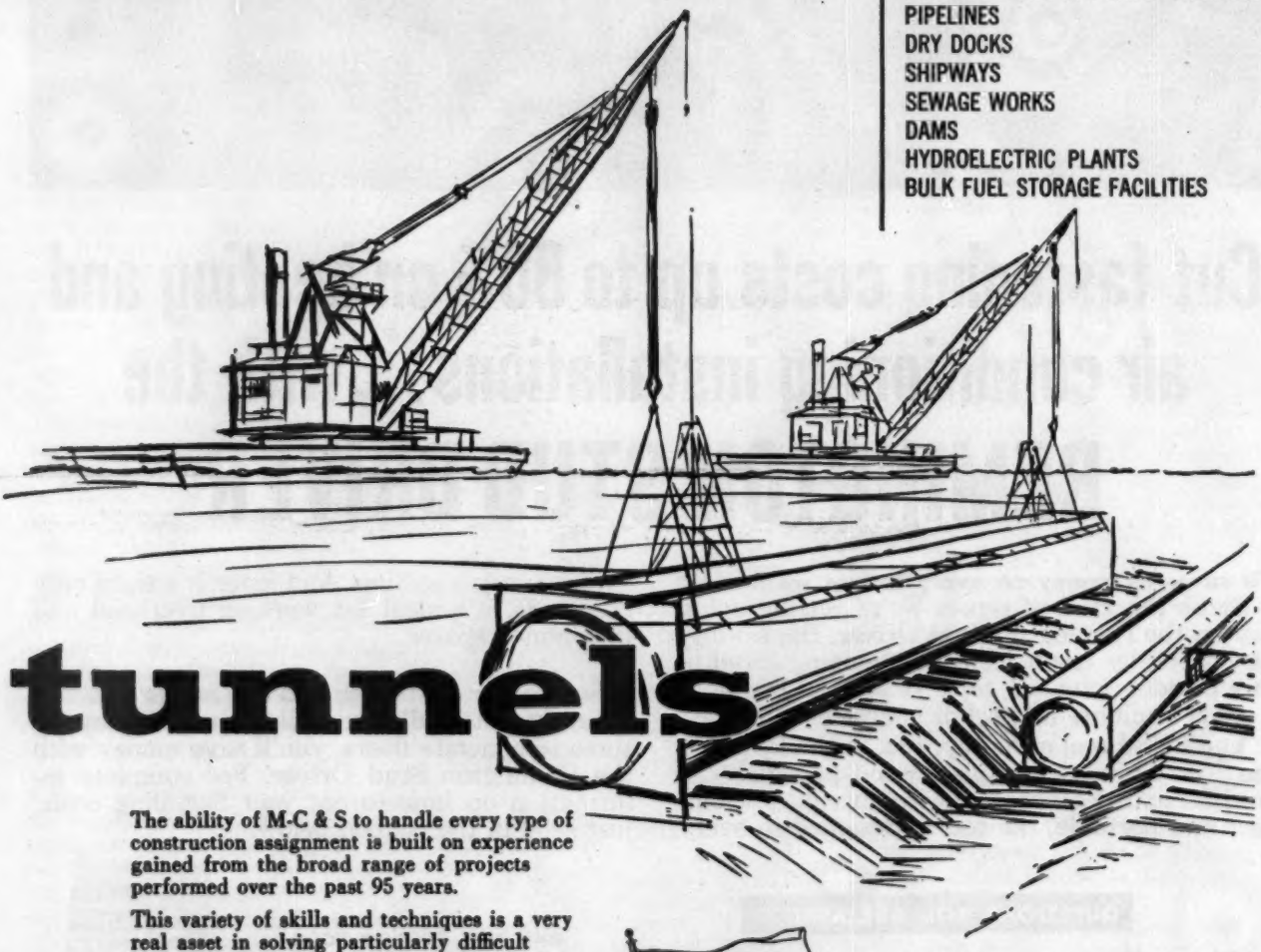

tunnels

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- The 4 mile tunnel-bridge across Hampton Roads, for the Virginia State Highway Department.

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OFFICIAL PROPOSALS

Bids: May 26, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the twenty-sixth day of May 1955, by Henry A. Cohen, Director Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica 1, N. Y.						
Oneida	FARC 55-34	Vernon-Verona Station, S. H. 1930 Project S-429(1)	3.42	Asp. Conc., Opt.	$20,000 Plans $10	$363,000
DISTRICT No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Genesee	P.S.C. 5396 P.S.C. 5936 P.S.C. 6500 P.S.C. 7685	Elimination of the New York Central and Lehigh Valley Railroads with Various Streets and the Erie Railroad in the City of Batavia	2.33 (4.75 RR Rel.)	Railroad Relocation = 4.75 Mi. Cem. Conc. Pavt. Var. Wide = 0.69 Mi. Asp. Conc. Opt. = 1.64 Mi. 5 RR Sepa. Plate Girders 100', 50', 74', 78' and 100.4' 3 RR Sepa. I-Beams 39.3', 52.7' and 23.5' 1 RR Sep. Comp. I-Beam 569.9' 1 Br. Truss 165'	$350,000 Plans $100	$6,614,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	FARC 55-33	Kingston-Ellenville, Pt. 3, S. H. 141 Project F-462(6)	2.90	Asp. Conc., Opt.	$11,000 Plans $10	194,000
Westchester	H.T. 55-4	New York State Thruway—Hudson Section—Subs. 10 and 11 (Tuckahoe Road-Tarrytown)	....	Furnish and Erect 3,200 L. F. Woven Wire Fence	$600 Plans $10	11,000
Orange	C.T. 55-7	New York State Thruway-Catskill Section-Sub. 7 (Suffern-Harriman)	0.06	Misc. Work Ped. Overpass Comp. I-Beam 195.5'	$2,200 Plans $10	39,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

John W. Johnson
SUPT. OF PUBLIC WORKS

Bids: May 19, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 19th day of May 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, Acting District Engineer, 353 Broadway, Albany, N. Y.						
Albany, Greene, & Schen.	C.T. 55-5 M.T. 55-3	New York State Thruway-Catskill Section-Subs. 3, 3A, 4, 5, 6 and 7 (Ulster-Greene Co. Line to Western Ave.) and Mohawk Section Subs. 1 and 2 (Western Ave. to Schenectady-Montgomery Co. Line)	....	Furnish and Install 80,500 L.F. of Beam Type Guide Railing	$14,000 Plans $10	$255,000
Saratoga	D.A. 55-1	Ketchums Corners East, Town Road Project D-AD-9(1)	0.46	Bituminous Macadam, Type 1	$900 Plans $10	16,000
District No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FARC 55-28	Brockport-Spencerport, S.H. 5539 Nichols Street, S.H. 9351 Lyell Avenue-Spencerport, S.H. 5529 Project F-783(5)	11.07	Asp. Conc., Opt.	$70,000 Plans $25	1,271,000
DISTRICT No. 5, C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FAET 55-1 FAOT 55-7 N.T. 55-1 FARC 55-7 FAST 55-1 S.T. 55-2	New York State Thruway (Triple Interchange)-Niagara Section-Sub. 1, Erie Section-Sub. 8E, Ontario Section-Sub. 9A, Harlem Avenue, Rossler Street Extension and Clinton Street, Pt. 1, S.H. 371 Project U-1072(2)	1.77 (Acc. 1.97)	9' Two Cree. Cem. Conc. 2 @ 25'-37' Var. Wide = 2.68 Mi. Asp. Conc. Opt. = 0.74 Mi. Misc. Work = 0.32 Mi. 1 RR-Hy. Sep. Plate Girder 208' 6 Hy. Sepa. Comp. I-Beams 195.8', 272.5', 309', 161', 179' and 142'	$170,000 Plans $50	3,044,000
Erie	FARC 55-29	Transit Road, Pt. 4, S.H. 9217 Project F-1079(5)	1.08	Misc. Work = 0.04 Mi. Asp. Conc. Opt. = 1.04 Mi.	$20,000 Plans $10	361,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Clinton	FARC 55-31	Champlain Village: Elm, Main and Locust Streets, S.H. 5647 Windsor, Pt. 2, S.H. 136 Windsor, Pt. 1, S.H. 57 Project S-450(1)	3.26	Asp. Conc. Opt. = 3.23 Mi. Misc. Work = 0.03 Mi.	$24,000 Plans $15	414,000
Lewis	FARC 55-32	Lowville-Carthage, S.H. 5332-5332B Project F-330(5)	3.98	Asp. Conc. Opt. = 3.94 Mi. Misc. Work = 0.04 Mi.	$28,000 Plans $15	495,000
St. Lawrence	FARC 55-21	Canton-Potsdam, Pt. 1, S.H. 5115 Project F-457 (4)	3.98	Asp. Conc. Opt = 3.89 Mi. Misc. Work = 0.09 Mi.	$25,000 Plans $15	441,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess	FARC 55-23	Rhinebeck-Elizaville, S.H. 552 Project F-322(13)	4.95	Asp. Conc. Opt. = 4.93 Mi. Misc. Work = 0.22 Mi.	$22,000 Plans $10	379,000
Orange, Rockland, & Ulster	C.T. 55-4	New York State Thruway-Catskill Section-Subs. 3, 4, 5, 6 and 7 (Suffern to Kingston)	....	Furnish and Install 122,050 L.F. of Beam Type Guide Railing	$22,000 Plans $10	400,000
DISTRICT No. 9, F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton 21F, N. Y.						
Chenango	FARC 55-30	Norwich-North Norwich, S.H. 505 North Norwich-Sherburne, S.H. 5121 Project F-456(5)	7.82	Asp. Conc., Opt. Widen Exist. 21' Conc. Slab Br. Widen Exist. 27' I-Beam Br. Widen Exist. 21' Conc. Slab Br.	$40,000 Plans $25	723,000

DISTRICT No. 1, N. F. Ronan, Acting District Engineer, 353 Broadway, Albany, N. Y.
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.
DISTRICT No. 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.
DISTRICT No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.
DISTRICT No. 5, C. R. Waters, District Engineer, 65 Court St., Buffalo, N. Y.
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

Albany, Greene, Schenectady, Herkimer, Madison, Montgomery, Oneida, Cayuga, Seneca, Onondaga, Genesee, Monroe, Ontario, Erie, Orange, Rockland & Ulster	T.T.S. 55-2	New York State Thruway—Hudson, Catskill, Mohawk and Ontario Sections	....	Furnish and Erect Directional Traffic Signs.	$5,400 Plans $10	98,000

NOTE: Plans and proposal for contract No. T.T.S. 55-2 will be distributed only by our Albany and New York offices but will be exhibited for examination in our District 1, 2, 3, 4, 5, and 8 offices where work is located.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 7, 1955

Contract EXD-130.017

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
FIFTH FLOOR ALTERATIONS

Sealed proposals for performing alterations on portions of the fifth floor of the Port Authority Building, 111 Eighth Avenue, New York 11, New York, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, June 7, 1955, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, May 12, 1955

Bids: June 17, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF SPILLWAY GATES, CONTROL GATES AND STOP LOGS
FOR
LONG SAULT DAM & IROQUOIS DAM
SPECIFICATION NO. PA-5-15077
ST. LAWRENCE CONTRACT NO. P13

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW York will receive sealed proposals for the manufacture, and furnishing of thirty-one 52'x30' spillway gates, thirty-two 52'x48' control gates and six 52'x8' stop logs and delivery thereof f.o.b. destination in the following ways:

(1) If delivered in person on the day of receiving bids until 10:30 A.M. Eastern Daylight Saving Time on the 17th day of June 1955, in Hearing Room C on the 6th floor, 270 Broadway, New York 7, New York.

(2) If mailed in until 10:15 A.M. Eastern Daylight Saving Time on the 17th day of June, 1955 at the Authority's office 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for 31 gates, or 32 gates and 6 stop logs, or 63 gates and 6 stop logs, in accordance with the bidding schedules. The total weight of all gates and stop logs is estimated to be 8000 tons. Erection at the site of installation will be done by Others.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by propective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, after May 4, 1955 upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid guarantee will be required with each bid in an amount not less than 10 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. C. CHAPIN
GENERAL MANAGER

Bids: May 24, 1955

Furnishing and Installing Refuse Incinerating Equipment

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for Furnishing and Installing Refuse Incinerating Equipment, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Daylight Saving Time, on May 24, 1955, and there publicly opened and read immediately thereafter:

CONTRACT A.
FURNISHING AND INSTALLING REFUSE INCINERATING EQUIPMENT

1. Location: The work is lcoated in Arlington County, Virginia, at S. Eads Street and 31st Street S.
2. Type of Work: The principal items of work include the following:—
   Two Refuse Incinerating Furnaces each of 150 tons per 24 hours rated capacity, complete with mechanical stoking, combustion chamber, connecting ducts, flues and other appurtenances. One common expansion chamber for three furnace units and flue to chimney.
3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Sanitary Engineer, Sanitation Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK (7) N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Bids: May 27, 1955

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CHANNEL IMPROVEMENTS
GALOP ISLAND SOUTH CHANNEL
NEAR OGDENSBURG,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-511019
ST. LAWRENCE CONTRACT NO. 15

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Galop Island South Channel near Ogdensburg, St. Lawrence County, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A. M. Eastern Daylight Saving Time on the 27th day of May, 1955, 270 Broadway, Hearing Room C on the 6th floor, New York, New York.

(2) If mailed in until 10:15 A. M. Eastern Daylight Saving Time on the 27th day of May, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

The principal items of work are:

Estimated:
5,000,000 cu. yds. Excavation, Common
497,000 cu. yds. Excavation, Rock

The work shall be completed on or before March. 1, 1956.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set and five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids will be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 24, 1955

Fort Pierce Port Authority

The Board of Commissioners of the Fort Pierce Port Authority requires the services of an engineering firm with special experience and qualifications to carry out the following work, looking toward the reactivation of an existing port facility:

1. Complete economic study, including traffic, rates, earnings, area benefits, and development of resources existing and projected.
2. Physical facilities existing and projected.
3. A recommended development plan, in stages, to reactivate port on a self-liquidating basis.

It is requested that interested engineering firms, whose normal practice has included similar economic development studies for other ports, submit brochures of their qualifications and record of performance in accordanee with established codes of ethics of the recognized engineering societies. It is requested that such brochures be received by the Fort Pierce Port Authority not later than May 24, 1955.

Harry J. Kiciliter, Chairman
Fort Pierce Port Authority
Drawer 111
Fort Pierce, Florida

U. S. Government

Commonwealth of Massachusetts, Metropolitan District Commission. Sealed bids or proposals will be received by the Metropolitan District Commission at its office, 20 Somerset Street, Boston, until 1:00 P.M. (D.S.T.) Thursday, May 26, 1955, and at that time and place will be publicly opened and read. The work to be done consists of Grade Separation and Reconstruction, Msgr. McGrath Highway, Squire's Bridge to Cross Street, Somerville. Charge for specification is $40.00 which amount is returnable only to bidders. Proposal guarantee shall consist of a certified check for $50,000.00 payable to the order of the Commonwealth of Massachusetts. Attention is called to the minimum rates of wages to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Chapter 461 of the Acts of 1935. Complete information may be obtained from the office of the Commission. The right is reserved to reject any or all proposals. By: Charles W. Greenough, Commissioner, April 27, 1955.

Sealed bids for lighting and painting improvements, etc., U. S. General Post Office, 8th & 9th Aves., & 31st & 33rd Sts., New York, New York, will be received until 2:00 P.M., EST May 24, 1955 in Rm. No. 3, 250 Hudson Street, New York, N. Y., and then publicly opened in Rm. #3. Bidding material may be obtained from General Services Administration, 250 Hudson St., New York, N. Y., or Public Buildings Service, Rm. 1304, General Services Bldg., 19th & F Sts., N. W., Washington, D. C., EX-34900, Extn. 2397. P. A. Strobel, Commissioner of Public Buildings, General Services Administration.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: May 31, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF POWER CIRCUIT BREAKERS
SPECIFICATIONS NO. PA-5-14021
ST. LAWRENCE CONTRACT NO. P17

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of power circuit breakers and delivery thereof, f.o.b. the Authority's classification yard, Massena, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M., Eastern Daylight Saving Time on the 31st day of May, 1955, 270 Broadway, Hearing Room C on the sixth floor, New York, New York.

(2) If mailed in until 10:15 A.M. Eastern Daylight Saving Time on the 31st day of May 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address gievn in (1) above.

Bids will be entertained for the power circuit breakers, associated equipment and services in accordance with the bidding schedules. Erection at the site of installation will be done by others but services of erecting engineers shall be provided by the manufacturers if and when required. Delivery of twelve 115 kv. power circuit breakers will be required by August 15, 1957, and twelve 230 kv breakers by May 15, 1958.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five (5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. Bid deposit will be required with each bid in an amount not less than 10 percent of the maximum price bid for any schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: June 1, 1955

Indiana Toll Road Commission 309 W. Washington Street Old Trails Building Indianapolis, Indiana

NOTICE TO BIDDERS
Contract No. C-5

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, June 1, 1955, for the performance of the contract enumerated above.

The grading, drainage, structures and paving of approximately 0.75 miles in Construction Section C-5 of the Indiana East-West Toll Road beginning at a point about 91 feet west from the centerline of West 149th Street in the City of Hammond at Toll Road Centerline Station 517 + 20 and extending southeastwardly to a point about 1,807 feet northwestwardly from the centerline of Indianapolis Boulevard at Station 556 + 35, in the City of East Chicago, Indiana.

This project also includes the construction of bridges and embankments for the relocation of the Chicago South Shore and South Bend Railroad, located as follows: Beginning at a point on the centerline of said railroad at Station 3558 + 74±, said point being about 287.7 feet southeastwardly from the centerline of West 149th Street in the City of Hammond; thence in a southeastwardly direction a distance of about 3,774 feet to a point on the centerline of said railroad at Station 3521 + 00 in the City of East Chicago, Indiana.

The approximate quantities of the major items of construction are as follows:

Borrow ..... 244,000 Cubic Yards
10" Reinforced Portland Cement Concrete Pavement ... 8,700 Square Yards
Hot Asphaltic Concrete Surface Course ..... 400 Tons
Culvert Pipes and Underdrains ..... 8,350 Lineal Feet
Concrete for Structures. 25,500 Cubic Yards
Reinforcing Steel ..... 4,340,000 Pounds
Fabricated Structural Steel ..... 18,662,000 Pounds
Metal Handrail ..... 29,000 Lineal Feet
Steel Piling ..... 155,000 Lineal Feet

Copies of the Plans, Specifications and Proposal Forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road ..... $ 5.00
Plans, Special Provisions and Proposal Forms, per set, per Construction Section $25.00

Informational Drawings

Cross Sections, per set, per construction Section $25.00
Soil Plan and Profiles, per set, per Construction Section ..... $ 5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Conrtact Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid per Construction Section covered by the Contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, June 1, 1955, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder or Bidders whose Proposal is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Charles W. Keating
Secretary-Treasurer

Bids: June 7, 1955

Contract NYA-590.003

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
PERMANENT CARGO BUILDINGS
PAVINGS AND UTILITIES

Sealed proposals for the furnishing and installation of paving and utilities for cargo buildings Nos. 80, 81, 82 and 83 and Building No. 85 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, June 7, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 12, 1955

Bids: May 31, 1955

Sewage Treatment Facilities

THE PORTLAND SEWER DISTRICT
TOWN OF PORTLAND, CONNECTICUT
ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of Sewage Treatment Facilities for the Portland Sewer District, Town of Portland, Connecticut, will be received by the Secretary of the Portland Sewer District at the Town Hall until 7:00 P.M. Daylight Savings Time, May 31, 1955, at which time they will be publicly opened and read. The work consists of a sewage treatment plant for one section of the District and a septic tank for another section.

Each bid shall be in accordance with the requirements of the Contract Documents which are available for examination or purchase at the office of the Secretary of the Portland Sewer District, Town Hall, Portland, Connecticut, or of Gibbs & Hill, Inc., Consulting Engineers, Pennsylvania Station, New York 1, New York. Copies may be purchased upon deposit of $20.00 per set, which deposit will be refunded to each actual bidder or ½ the deposit to non-bidders, upon return of such copies in good condition within 5 days after the bids are opened.

The District reserves the right to reject any or all bids and to waive any informality in bids received.

BOARD OF SEWER COMMISSIONERS
THE PORTLAND SEWER DISTRICT
PORTLAND, CONNECTICUT
By: McClure E. Ellsworth
District Secretary

Dated: May 4, 1955

Bids: May 24, 1955

Construction of Incinerator Chimney and Concrete Base Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of an Incinerator Chimney and Concrete Base as described below will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Daylight Saving Time, on May 24, 1955, and there publicly opened and read immediately thereafter:

CONTRACT C
CONSTRUCTION OF INCINERATOR CHIMNEY AND CONCRETE BASE

1. Location: The work is located in Arlington County, Virginia on County owned land at S. Eads Street and 31st Street S.
2. Type of Work: The principal items of work include the following:—
   A brick chimney of 12 ft. inside diameter and approximately 168 ft. high on a reinforced concrete base.
3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents, may be examined at the office of the Sanitary Engineer, Sanitation Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7) N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of TEN ($10.00) DOLLARS PER SET.
   Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.
   All bids must be on the form contained in the Contract and Specifications.
   Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.
   All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.
   The successful bidder will be required

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Bids: June 7, 1955

Contract TA-250.001

THE PORT OF NEW YORK AUTHORITY
TETERBORO AIRPORT
BUILDING NO. 70

Sealed proposals for the construction of Building No. 70 at Teterboro Airport, including paving, landscaping and utilities therefor, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, June 7, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen on or after May 16, 1955, at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, May 12, 1955

Bids: May 24, 1955

ADVERTISEMENT FOR BIDS
FURNISHING AND INSTALLING
INCINERATOR CRANE
ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all materials and equipment and doing all work required for the Furnishing and Installing of an Incinerator Crane, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Daylight Saving Time, on MAY 24, 1955, and there publicly opened and read immediately thereafter:

CONTRACT B
FURNISHING AND INSTALLING INCINERATOR CRANE AND APPURTENANCES

1. Location: The work is located in Arlington County, Virginia at S. Eads Street and 31st Streets.
2. Type of Work: The principal items of work include the following:—A three and half ton capacity Incinerator Crane and associated equipment and appurtenances.
3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Sanitary Engineer, Sanitation Division, Arlington, Va.; at Dodge Reports, 900 F. Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7) N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of TEN ($10.00) DOLLARS PER SET. Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) per-

OFFICIAL PROPOSALS

cent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Bids: May 20, 1955

State of New Jersey
State Highway Department
Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4 PARKWAY, SECTIONS 1E, 2G, 4H, 5E, 6K, 7G, 8E & 9K

Route 4 Parkway, Sections 1E, 2G, 4H, 5E, 6K, 7G, 8E and 9K, from Route U. S. 9 to Route U. S. 22, Widening Woodbridge, Clark, Cranford and Union Townships, and Borough of Kenilworth, Middlesex and Union Counties, Federal Project No. U-188(30). Length—12.943 miles. The principal items of work are: Estimated:

62,500 cu. yds.	Roadway Excavation—Unclassified
48,000 cu. yds.	Subbase
244,500 sq. yds.	4" Topsoiling
17,152 sq. yds.	6" Stone Base Course
47,200 sq. yds.	4" Macadam Base Course
17,152 sq. yds.	2" Penetration Macadam Surface
43,650 sq. yds.	Pavement Type MA-BC-1, 2" thick
10,700 sq. yds.	Pavement Type FA-BC-2, 2½" thick
172,050 sq. yds.	Conc. Pavement Surface, Plain, 8" thick
2,925 sq. yds.	Conc. Pavement Surface, Rein. 13" aver. thick
2,158 sq. yds.	Bridge Approach Slabs, Rein. 18" thick
25,434 lin. ft.	White Concrete Vertical Curb

Bids for the above will be received at the office of the State Highway Department in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Friday, May 20, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME) TEN o'clock, (10:00 A.M.—DAYLIGHT SAVING TIME) and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statment and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 413, 82nd Congress, and P. L. 350, 83rd Congress, and is to be performed in accordance with the Required Provisions=Federal-Aid Contracts of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to

OFFICIAL PROPOSALS

A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J. with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special sealed addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 25, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge construction for a section of the Massachusetts Turnpike in the Towns of Otis and Blandford (CONTRACT NO. 51-031) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 11:00 A.M. of Wednesday, May 25, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

PROPOSAL GUARANTY: $140,000

Charge for plans and proposal forms: $70.00, not refundable.

Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts, and at office of Section Engineer: Thomas Worcester Corp., 85 State Street, Boston, Massachusetts.

Minmium wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
April 30, 1955.

EMPLOYMENT

(Additional employment advertising on pages 177-179)

DAM ENGINEERS, minimum of four years experience in construction and/or design of dams, preferably with a working knowledge of soil mechanics and concrete control for duties involving review of plans and specifications, report writing, field investigations and inspections, with some travel and public relations. Opportunity for administrative experience and advancement.

HYDRAULIC ENGINEERS, minimum of ten years responsible engineering experience in design and construction of flood control projects, four of which have been supervisory capacity. Required to plan and direct flood control investigations and studies, prepare engineering reports, supervise preparation of contract plans and specifications, administer construction contracts, and direct activities of engineering office. Age between 35 and 55 years and a college graduate with major in engineering.

LOCATION, Pennsylvania. Give full details of experience, education, age, salary expected and references.

ADDRESS replies to

P-6477, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:

(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

EMPLOYMENT ADVERTISING:

New Employment Opportunities Section for Displayed ads starting July issue. For details see announcement ad in this section.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y., for May 26th issue closing May 16th

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Engineer for estimating and project coordination as assistant to President of Nationally known Gunite Company, Philadelphia area. P-6085, Engineering News-Record.

Estimator, for firm doing extensive sewer, watermain, treatment plant, heavy construction. Must be graduate engineer or have extensive engineering background, with ability to obtain price and job information. Permanent position for qualified applicant. P-6074, Engineering News-Record.

Wanted: General superintendent for mid-western building construction organization. Age between 35 and 50. A good opportunity with salary and bonus for qualified man. Submit complete resume and required salary. P-6199, Engineering News-Record.

Sales Engineer: Young; Civil; with two or three years of engineering or construction experience for sales and promotional work on drainage and allied construction products and steel buildings. Salary, car and expenses furnished. Positions open in Texas, Mississippi and Oklahoma. P-6361, Engineering News-Record.

Attention . . .

EMPLOYMENT ADVERTISERS

Effective with the first July issue, a new section will start in ENGINEERING NEWS-RECORD. We will head this section: EMPLOYMENT OPPORTUNITIES. All Displayed Employment Opportunity advertising will be placed in this new section, with the exception of those advertisers who contract for run-of-book position. New advertisers will be billed at the transient rate of $24.25 unless on contract. Contract rates furnished on request. Advertisements are subject to Agency Commission.

For full information write:

ENGINEERING NEWS-RECORD

Classified Advertising

330 West 42nd St.,
New York 36, N. Y.

POSITIONS VACANT

Wanted. Sanitary or Civil Engineers as resident engineers on large sewage project involving sewage treatment plant, pumping stations, and 63-½ miles of intercepting sewers including 30 miles in tunnel. Program calls for 3-year construction period. Must be experienced. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, Pittsburgh 19, Pennsylvania.

Wanted: Construction Superintendent and Foreman for Water Mains and sewers. Steady employment in or near Indianapolis. Experience required. P-6434, Engineering News-Record.

Civil Engineer, Top flight surveyor and office engineer for difficult highway job with several structures. Good salary for qualified man. Chicago area. P-6436, Engineering News-Record.

Experienced Engineer capable of taking charge of a highway design project. Location Middle Atlantic. Attractive salary and also some participation. P-6437, Engineering News-Record.

Man Wanted: Engineering graduate, age 25-30, permanent position in expanding New England Coastal community, with established firm engaged in manufacturing several building items with some construction. Excellent long range opportunity. P-6439, Engineering News-Record.

Engineer—Married man about 40 years of age. Experienced in water mains, roads and sewer construction. Steady employment 12 months per year with two weeks vacation. Write P-6378, Engineering News-Record.

Wanted, young field engineer for large cement company, St. Louis area. Half-time traveling to near states. C. E. Degree, ability to meet people required. No selling. Submit snapshot with qualifications. Expenses, car and salary. P-6349, Engineering News-Record.

Supervisor wanted for plant mix and surface treatment. South central Ohio. Reputable firm. References required. P-6348, Engineering News-Record.

Wanted hydraulic engineer with several years experience in flood control by technical and educational association located in the Middle West. Some travel required. Reply giving resume of experience, education, salary expected and references. P-6364, Engineering News-Record.

Asphalt Road Superintendent permanent posi-tion, write stating qualifications to: Box 142, Greenwich, Connecticut.

University Teaching position open to teach engineering drawing and mechanics, Dept. of Engineering Mechanics, University of Nebraska. Rank and salary based on applicant's qualifications. Write inquiries to E. J. Marmo, Chairman of Dept., Lincoln, Nebraska.

Instructors: Mechanics, structural theory, and highway traffic, beginning September 1, 1955. Location, Mississippi. P-6286, Engineering News-Record.

Engineer to estimate and design prestressed concrete members for established prestressed concrete manufacturing plant. P-6285, Engineering News-Record.

Structural Designer, Food Manufacturer has opportunity for young graduate engineer with three to five years of experience in design and/or construction of industrial buildings or equivalent work. Location, Southern Michigan. This is an exceptionally fine opportunity for future development to the person who has leadership potential and proven work habits. State qualifications, age, salary and availability. Reply P-6309, Engineering News-Record.

Young Engineer interested in concrete. Loca-tion Ohio. Salary $400. plus. Liberal travel allowance. P-6383, Engineering News-Record.

(Continued on following page)

EARTHMOVING MACHINERY DISTRICT SALES REPRESENTATIVES

A large manufacturer of rubber-tired and crawler off-the-highway earthmoving equipment has immediate openings for two District Representatives for assignment to territories in Central-Midwest and Northwest United States.

These men should be between 30 and 40 years of age and have from 5 to 10 years experience as salesmen for construction equipment dealers or manufacturers.

Please reply stating full qualifications and requirements to

P-6352, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

WANTED—EARTHMOVING SALES REPRESENTATIVES

Responsible positions open for qualified experienced sales representatives in connection with expanding sales program. Knowledge and experience with heavy earthmoving equipment essential. Civil engineer graduate preferred. Send complete qualifications and recent photograph to:

Mr. R. W. Christofferson, Sales Mgr.
WOOLDRIDGE MANUFACTURING DIV.
Continental Copper & Steel Industries, Inc.
Sunnyvale, California

DESIGN ENGINEERS

Permanent Openings Available at Our Cleveland, Ohio Offices for qualified DESIGNERS experienced in:

. . . . STRUCTURAL STEEL
. . . . REINFORCED CONCRETE
. . . . PRESSURE VESSEL
. . . . PROCESS PIPING
. . . . PROCESS HEATERS
. . . . EQUIPMENT SPECIFICATIONS
. . . . INSTRUMENT SPECIFICATIONS
. . . . HEAVY MACHINES

- - - - Top Hourly Rates
- - - - Bonus Participation
- - - - Moving Expense Allowance

WRITE—giving complete details of experience, education, age, etc.—to:

E. A. Kolner,

ARTHUR G. McKEE & COMPANY
2300 Chester Ave. Cleveland 1, Ohio

HIGHWAY ENGINEERS

Designers, Detailers and Draftsmen for office work on highways and expressways. Long-term projects. Desire experience or training including alignment and profile computations, layout on aerial photographs, geometric design of interchanges and associated work.

Employee Benefit and Retirement Plan, paid vacations and holidays, sick leave. Modern, air conditioned offices in downtown St. Louis. Please write fully to or inquire at

SVERDRUP & PARCEL ENGINEERING CO.

1625 Eye Street, N.W.
Washington 6, D. C.

1134 Locust
St. Louis 1, Mo.

WANTED

STEEL ERECTION SUPERINTENDENT

With previous record in the erection of double leaf bascule bridges. Four months work in Wilmington, Del. starting October 1. Compensation unusually attractive.

Reply:

A. S. WIKSTROM INC.
Skaneateles, N. Y.

STRUCTURAL ENGINEER

Must have had structural fabricator experience. Some sales experience very desirable. A better than average permanent position with reputable fabricator Pittsburgh District. Give full details.

P-6371, Engineering News-Record
330 W. 4t St., New York 36, N. Y.

OVERSEAS EMPLOYMENT
Guam Project

ASSISTANT CHIEF ENGINEER

Experienced on large industrial type buildings and related utility projects. Graduate Engineer with at least 10 years' experience required.

Write, giving detailed account of experience, education, etc.

BROWN-PACIFIC-MAXON
"Guam" Contract NOy-13931
P. O. Box 3316, Rincon Annex
San Francisco "19"—Calif.

OPPORTUNITY
FOR
CIVIL ENGINEERS

City of Kenosha, Wisconsin is accepting applications for Engineers—both permanent and temporary. Salary range from $4200 to $6600 depending on experience.

Social Security, State retirement plan, Blue Cross, Blue Shield, 40-hour week.

Opportunity for diversified experience in street paving, storm sewers, sanitary sewers, water supply.

Apply City Manager, City Hall, Kenosha, Wisconsin.

CEMENT PLANT DESIGN ENGINEERS

Old well established Engineering Firm in Western Pennsylvania needs two engineers with design, construction and considerable practical experience in actual cement mill operation. One could well be of recently retired status, the other preferably in the 35 to 45 year age bracket. Replies held confidential and will be promptly acknowledged. Please give all pertinent details in chronological experience record and salary expected in first letter to

P-6297, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

EXECUTIVE HIGHWAY ENGINEER

For foreign assignment. Must have extensive experience in top responsible capacity for initiating and directing large scale traffic studies and requirements. Experience record must, also, show complete responsibility for investigating requirements of drainage, types of pavement, soil stabilization, bridge structures and construction materials.

P-6222, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SPECIFICATION WRITER

Graduate Civil Engineer or Architect with a minimum of 5 years experience in writing Architectural and Civil Engineering trades for all types of projects. Would be in charge of Specification Department. Send complete experience record with name and address of references and salary requirements to

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P-6386, Engineering News-Record
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P-6385, Engineering News-Record
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POSITIONS VACANT
(Continued from preceding page)

Sprinkler Engineer (Mid-West)—Must be experienced in design, installation, and sales to head up and manage automatic sprinkler division of AAA-1 Company. Permanent position, excellent opportunity. Write giving resume of experience, education and salary requirements. P-6388, Engineering News-Record.

Experienced Estimator and Chief Engineer between the ages of 34 and 48 for preparing estimates, pricing, purchasing, expediting and job management. Permanent position for top man with Midwest General Contracting Firm specializing in industrial, commercial and public works. None other but top man need apply as this job will be in the capacity as assistant to the President. Send complete history, including education, past experiences, references, salary expected and photograph if available. P-6400, Engineering News-Record.

Wanted: Civil Engineer to head Division of Construction Supervision of large sewage works project. One experienced in tunnel construction of aqueducts and sewers preferred but not essential. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa.

Teaching Position—Engineering Graduate, Industrial and teaching experience desirable. Opportunity to work on advanced degree. Write: Head, Department of Engineering Drawing, Iowa State College, Ames, Iowa.

Construction Estimator experienced in competitive bidding, (quantity take-off, pricing, sub-bids etc.) for all types of building required by established and progressive general contractor in North Western Ohio and Michigan. Engineering degree preferred but not essential. Write stating qualifications, previous employment, availability and references. Salary open, commensurate with experience and ability. Permanent position for qualified applicant. P-6405, Engineering News-Record.

Engineer, Chem. or Civil, National trade assn., building materials; headquarters N. Y. C., some travel. Min. 2 yrs experience. Salary 5 to 6,000 depending on qualifications. Send resume of training and experience. P-6423, Engineering News-Record.

Construction Expediter, for office, field coordination with general contractor, doing commercial and public work. Cleveland, Ohio and vicinity. P-6379, Engineering News-Record.

Precast Concrete experienced man with ability to organize and direct factory operation of a large company that has an opening in this department for a man with ambition. Salary open. Location South. P-6422, Engineering News-Record.

Architect or Engineer—Opportunity for young graduate engineer to supervise construction store buildings for large variety store chain. Considerable traveling. Write details, age, education, marital status, starting salary. P-6387, Engineering News-Record.

Designer—Experienced in hydraulic and sanitary work to supplement existing consulting office capacity. Permanent. Salary open. Midwestern city. Apply P-6418, Engineering News-Record.

Estimator-Office Engineer—Experience in engineering type construction preferred. Excellent opportunity for profit sharing arrangement for qualified man. Submit complete education, experience background, salary requirement to United Construction Co., Inc. Box 5104—Memphis 12, Tenn.

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Wanted Engineers, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E., and Ind., also Teachers and Chemists, Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

Construction Engineer—BSCE—5 yrs. field & office with small construction firm. Experience: Supt. on buildings up to half million, estimate and bid buildings up to 1 million, design small buildings & deal directly with clients. Reg. P.E. Conn. & R.I. Age. 28, married, children. Desire chance for advancement in responsible position. Prefer East. PW-5794, Engineering News-Record.

Construction Executive, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-5956, Engineering News-Record.

Mechanical Inspector thirty years installation and supervision in heating, plumbing, process piping and air conditioning. PW-6231, Engineering News-Record.

(Continued on opposite page)

POSITIONS WANTED

(Continued from opposite page)

Professional Engineer and surveyor, age 43 wishes to associate with established consulting engineer on possible partnership basis; financially responsible experienced in methods of many leading AE firms, waterworks, sewage disposal, subdivisions, and atomic energy facilities. Phone O. R. 2-8517 Apt. #3 5410 W. Greenfield Ave., Milwaukee 14, Wisconsin.

Equipment Super—with experience and know how to satisfy the toughest operating conditions. Able to get the largest productive life from your equipment. Willing to travel, available for interview. Answer PW-6333, Engineering News-Record.

Project Supervisor—Manager—general superintendent. Chemical process packaging plants. U. S. and foreign. Knowledge projects in toto flow sheets to production by progress through engineering and construction departments. Degree equivalent. 25 years experience. Residence N. Y. City. Will accept office, field, and foreign assignments. PW-6208, Engineering News-Record.

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Construction Executive. Engineer with ten years experience as head of organization planning and directing programs of construction and maintenance of large housing installations, storage depots, and ports. New York license. Available for overseas. PW-6447, Engineering News-Record.

Civil Engineer, 25 years experience—highways—bridges—sewers—structures. Desires position with contractor or consulting engineer in New England or New York. PW-6445, Engineering News-Record.

Graduate Civil Engineer, age 48, single; 24 years experience in surveying, layout and construction. PW-6446, Engineering News-Record.

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PW-6449, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Transportation Consultant

Graduate Civil Engineer 28 years railroad experience, completing 5 years foreign service railroad and harbor operations and maintenance, surveys, reports and analysis, available after July 1st. Resume and commendations upon request.

PW-6417, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS WANTED

German, 25, 3 years in Canada, wants job in U.S. visa pending. 9 years German High school, 2/3 ICS Civil Engineering course. Experience as surveyor instrumentman, inspector of concrete mix control and placing, guniting, pressuregrouting, pipeline fabrication and erection, radiographs of welds, castings, steel structures, physical testing of metals and other materials. Reply to PW-6438, Engineering News-Record.

C.E.—33—10 years diversified field and office experience in heavy construction and appraisal desires opportunity to establish permanently. Resume sent. PW-6381, Engineering News-Record.

Engineer, Civil—32, BCE, MCE, PE(NY). Ground water investigation and reports 3½ yrs. plus, bldg. eng. (civil and mech—including well drilling) 2 yrs., some teaching—$6500. Avail. June 1, PW-6401, Engineering News-Record.

Engineer—over 30, 2 yrs. college, over 12 yrs. experience in all phases of manufacturing, 6½ yrs. inside, 6 yrs. field and trouble shooting. Living in suburb to Binghamton, N. Y., preference given to salaried position with expenses and percentage, as manufacturers representative or associated equivalent, covering Northeastern U. S. with permanence of position and employment. PW-6407, Engineering News-Record.

Highway designer experienced in charge of toll and expressway projects desires responsible place with firm engaged in highway design and construction or with responsible contractor. PW-6410, Engineering News-Record.

Estimator heavy construction 5 years good varied field and office experience N. Y. only. PW-6394, Engineering News-Record.

Graduate engineer, 28, 4 yrs. varied experience in const. & engineering, desires office—field position with contracting firm, location North East U. S. PW-6443, Engineering News-Record.

Field Engineer, party chief, inspector. 15 years construction, property, college trained, prefer Southeast. PW-6442, Engineering News-Record.

Construction Engineer, P.E. 14 yrs. broad experience in bldg. work desires position in construction management: design, purchasing, estimating, expediting etc. Age 36. PW-6441, Engineering News-Record.

Architect, Registered, Broad executive, contract, technical experience (foreign and domestic) interested in representing architectural or engineering firms located in the south, mid-west, west-coast, or foreign, as their New York area client or consultant contact for coordination expediting, new business, PW-6461, Engineering News-Record.

BUSINESS OPPORTUNITIES

Partnership available — highway contractor wants full time working partner to invest minimum of $35,000 to expand equipment fleet. Mid-Southern location. Prefer man with C. E. Degree. BO-6303, Engineering News-Record.

Construction Engineer seeks management connection small or medium sized general contractor. East or South. BO-6421, Engineering News-Record.

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W-6161, Engineering News-Record
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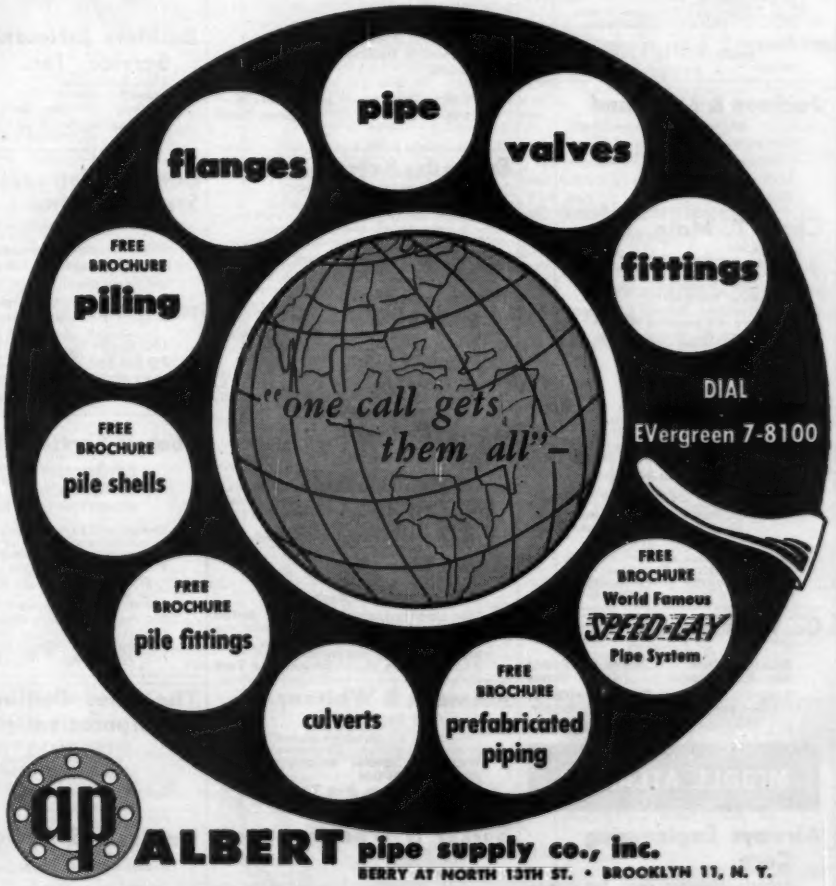

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Very Interesting—And Now, About That Down-to-Earth Problem!

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Welcome Help

HIGHWAYS FOR SURVIVAL is the watchword adopted by a committee of prominent citizens that has undertaken to gain fresh and wider support for President Eisenhower's plan to complete the 40,000-mile Interstate Highway System within the next ten years. That plan now is badly bogged down in Congress. Hence, the help of this new group is welcome in convincing Congress of the urgent need for making fast completion of the Interstate System an integral part of any highway legislation it approves.

The new committee has the advantage of being made up in large part of influential people not directly connected with highway construction or with industries depending on highways for new business. On the committee are bankers, industrialists, publishers, educators, heads of service organizations and insurance executives. A few members have been drawn from the automotive industries. The chairman is Arthur O. Dietz, president of the CIT Financial Corp.

Up to the present time, most of those who have urged Congress to approve the President's program have been men from the highway building industry. They know best what the need is and how serious delay in starting a much bigger program will be. But Congress appears to have discounted their expressed fears because of their direct interest in road building. What is needed now are new voices, the voices of aroused citizens having no direct interest in the building of highways but who realize that adequate highways are necessary if the nation is to survive and grow.

Herein lies the value of what the Highways for Survival Committee is attempting to do. Its help comes at an opportune time.

Busy Years Ahead

READERS OF ENR who have been worried about the solidity of the current construction boom should be encouraged by two reports on the future of the U. S. economy that have been published within the past few weeks.

One, by the McGraw-Hill Department of Economics, estimates that U. S. businessmen plan record spending for plants and equipment this year, about 5% above 1954 (ENR Apr. 28, p.111). And preliminary plans for 1956 already are only 3% lower than 1955. This estimate is based on a wide survey of business enterprises. If preliminary plans are boosted—as they always have been since the McGraw-Hill surveys began—1956, 1957, and 1958 will be years of very high spending, possibly new records.

A wider look at the U. S. economy has just been provided by the Twentieth Century Fund's new survey of America's needs and resources. This is an updated version of a remarkably accurate forecast that the fund published in 1947. Though projecting a growth of 29% in our production of goods and services during the years 1950 to 1960, this study concludes that by 1960 about 8% of our needs still will be unfulfilled. In terms of money, that would be $34 billion short of what is needed to reach the minimum living standards set by this survey group.

The survey points to our well-known deficiencies in schools, highways, hospitals, sanitation facilities and water supply. On housing, it estimates that we would have to build 1.5 million housing units each year during the years 1950 to 1960 to reach minimum standards. Even the present boom is running behind that level.

Concerning highways, the survey states that our needs can only be met by some such bold planning as President Eisenhower has proposed to Congress.

It is easy to see from these two reports that the construction industry has a full-capacity job to do for as many years as one can see ahead. Undoubtedly, there will be setbacks; but the long-range picture is one of rapid growth, if the world can remain at peace. As the Twentieth Century Fund study suggests, we stand on the verge of being able to use almost unlimited sources of atomic and solar energy that could make the world of 1985 a very different place. In this process, construction will play an essential part.

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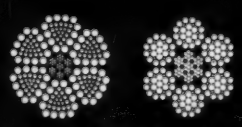

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